

SPECIFICATIONS



SECURITY CAMERA SYSTEM UPGRADE AND REPLACEMENT for MONTGOMERY COUNTY DETENTION CENTER

December 7, 2007

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SPECIFICATIONS

Security Camera System Upgrade and Replacement for Montgomery County Detention Center

December 7, 2007

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LEGAL ADVERTISEMENT

Sealed bids will be received in the 9th-floor Purchasing Department, Board of County Commissioners, County Administration Building, 451 West Third Street, Dayton, Ohio 45422, until 1:30 p.m., January 9, 2008, for Montgomery County Jail Inner Security Surveillance Camera Project. Said bids will be opened by the Purchasing Director as soon thereafter as the opening can begin in Room 1002, Montgomery County Administration Building.

Specifications are available at the Public Works Department, 7th floor, County Administration Building at a cost of Forty Dollars (\$40.00) non-refundable, for one set of documents, made payable to the Montgomery County Treasurer. Or the drawings and specifications may be downloaded from http://www.mcoho.org/RZ/RZ_bidsummary.asp, for free and registration shall be required.

Pursuant to Section 153.54 et. seq., of the Ohio Revised Code, the bidder shall submit a BID GUARANTY in the form of either:

- a) A bond for the full amount of the bid; or
- b) A certified check, cashier's check, or letter of credit pursuant to Chapter 1305, Ohio Revised Code, in the amount of TEN PERCENT (10%) of the bid. The successful vendor must replace the ten percent (10%) bid bond with a one-hundred percent (100%) Performance Bond upon award of the bid.

A mandatory pre-bid conference will be conducted on December 19, 2007, at 10:00a.m., at the Sheriff's Administration Building, Third Floor Conference Room, located at 345 West Second St. Dayton, OH 45422. All potential bidders are required to attend this conference and shall pay particular attention to the following provisions:

- a) The bidder shall examine the plans and specifications prior to the pre-bid conference and be ready to raise questions concerning any unclear matter in the bidding process.
- b) The bidder recognizes that the purpose of the pre-bid conference is to resolve ambiguities, inconsistencies, errors or omissions in the contract documents, and interpretations thereof shall be made with a preference to the accomplishment of the purpose of the contract, without additional cost to the Board.

Bids shall be enclosed in a sealed envelope identified as "Montgomery County Jail Inner Security Surveillance Camera Project" and MUST HAVE THE FULL NAME AND ADDRESS of the bidder on the envelope.

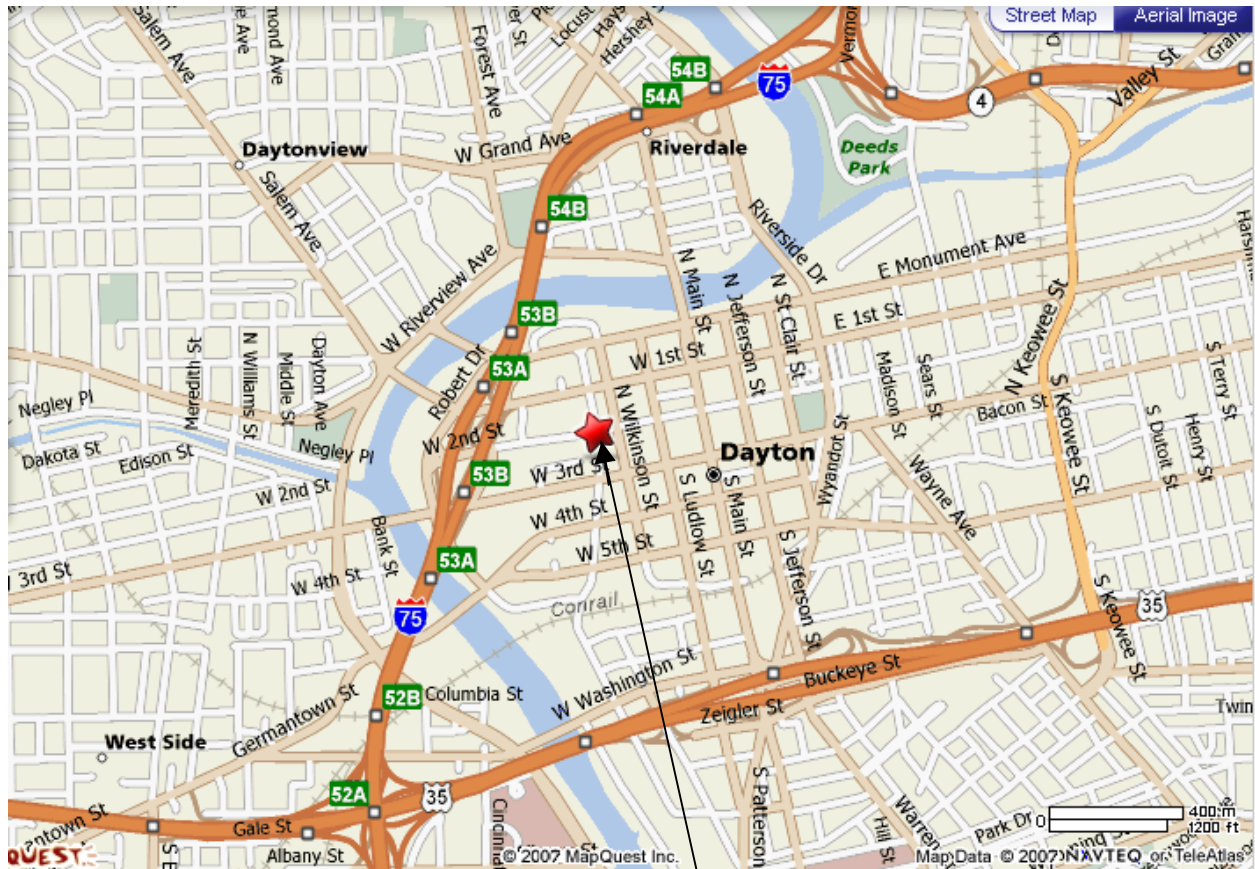
The county commissioners reserve the right to reject any or all bids and to waive any irregularity of bids, should same be to the advantage of the county.

BY ORDER OF THE BOARD OF COUNTY COMMISSIONERS OF MONTGOMERY COUNTY,
OHIO:

Roy M. Sigriz, Purchasing Director

Published in the Daily Court Reporter
on December 7, 2007 and December 14, 2007
1 Certified Ad to the Reporter on _____

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FOR MONTGOMERY COUNTY DETENTION CENTER



PROJECT SITE LOCATION:
303 WEST 2ND STREET
DAYTON, OHIO 45402

SITE MAP

INSTRUCTIONS TO BIDDERS

Please be certain that you have seen and understand all pages of these instructions to bidders as you will be responsible for doing so. To ensure the acceptance of your bid, please read and follow these directions:

NOTE: *All terms subject to clarification shall have the same definitions as found in the sample "Construction Contract Agreement" contained in these bid documents. All of the conditions applicable to the bid shall be read so as to give meaning to all of such provisions. However, when there is a conflict in the interpretation between a condition in the Instructions to Bidders and a Contract Document provision, the Contract Document shall control and the bidder shall raise such conflict at the mandatory pre-bid conference.*

1. GENERAL

- A. The Board of County Commissioners for Montgomery County, Ohio (the "Board") has created the following bid procedure to ensure an equal opportunity for all bidders, to ensure that bids received are responsive to the specifications, and to minimize any misunderstandings in advance of bid openings.
- B. Particular attention of all bidders is drawn to the provisions of this solicitation and the resulting contract dealing with pre-bid inquiries, pre-bid and pre-award conferences and the duty of the bidders to disclose any significant fact or question which will adversely affect the cost or time of completion of this project.
- C. Bidders are cautioned that they disregard these provisions at their own peril.
- D. Bidders are directed to study and follow these instructions as to the method and form for submitting bids so there will be no reason to reject a bid.
- E. **NOTE: The Electrical Contractor will act as "Prime Contractor" on this project.**

2. QUESTIONS ABOUT BIDDING

- A. All bidders are requested to submit to the Board written or, if time is not available, oral requests for explanation, interpretation or other inquiry, prior to the time set for the mandatory pre-bid conference. All such inquiries shall be issued to all bidders.
- B. Questions and inquiries concerning this bid shall be directed to the person designated in the bid documents for receipt of such questions or, if no such person is designated, to David L. Ricks, Director, Montgomery County Department of Public Works, P.O. Box 972, 451 West Third Street, Seventh Floor, Dayton, Ohio 45422-1403. All questions and answers covered at the pre-bid conference will be mailed to those in

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attendance at that conference. While every effort will be made to answer all questions at the pre-bid conference, the written response to any such questions shall be controlling in the event of a conflict with an oral response given at the pre-bid conference.

- C. **CAUTION:** *Only official, written addenda shall create a binding contractual commitment upon the Board in response to any request for explanation, interpretation or other inquiries. Any other response shall be for information only and shall not have contractual significance unless set forth in an official, written addenda.*

3. **WORK SITE CONDITIONS**

- A. All bidders are cautioned to read Paragraphs 3.1 and 4.2.7 of the General Conditions hereof, carefully, concerning the contractual responsibility of the Bidder for the conditions of the site.
- B. Each bidder shall visit the site of the proposed Work and fully acquaint himself with conditions as they exist so that it may fully understand the facilities, difficulties, and restrictions attending the execution of the Work under this Contract. Bidders shall also thoroughly examine and be familiar with the plans and specifications. The failure or omission of any bidder to receive or examine any form, instrument or document or to visit the site and acquaint himself with conditions there existing shall in no way relieve any bidder from any obligation with respect to its bid.
- C. The bidder shall make its own investigation to determine all underground structures and utility lines as much of the information on the Plans may have been obtained from records and may be subject to error.
- D. The submission of a proposal will be construed as an acknowledgment that the bidder has conducted its own investigation and fully understands the conditions and difficulties of the Work, Plans, Specifications, Contract Documents, and all matters relating to the Project.
- E. The successful bidder will provide the Owner a schedule indicating in what areas of the building work will be occurring, so that ten (10) days prior to the work commencing in each area, the Owner is notified. Some areas of the building may require an Owner escort and this will allow a minimum of ten (10) days
- F. There will be no drilling or hammering permitted on Tuesday afternoons.

4. **BIDDER QUALIFICATIONS**

- A. Each bidder shall, upon request of the Director of the Montgomery County, Ohio, Department of Public Works, submit on the form furnished, a copy of which is included in the Contract Documents, a statement of the bidder's qualifications, its construction experience, full details of work presently under contract, and full details

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on the last five (5) completed construction contracts, its organization and equipment available for the Work included in this Project; and, when specifically requested by the Director of the Montgomery County Department of Public Works, a detailed financial statement.

- B. By submitting a bid and providing information regarding past projects, the bidder is waiving any claims it may have against the owner or any person responding to requests for information. Even in the absence of such a provision, such persons are protected by a qualified privilege.

5. BID GUARANTY

- A. Each Proposal shall be accompanied by a certified check or cashier's check upon a solvent bank or a letter of credit pursuant to Ohio Revised Code Chapter 1305 executed by a surety company authorized to do business in the State of Ohio, for a sum equal to ten percent (10%) of the amount of the bid submitted, or, in the alternate, the bid can be accompanied by a Bid and Performance Bond for a sum equal to one hundred percent (100%) of the amount of the bid submitted, all pursuant to Revised Code Section 153.54, as guarantee that if the bid is accepted, a Contract will be entered into and its performance properly secured. Should any proposal be rejected, such certified check, cashier's check or letter of credit will be returned to the bidder, and should any proposal be accepted, such check or letter of credit will be returned to the bidder upon the proper execution and securing of the Contract and a Bid Bond pursuant to Revised Code Section 153.54.
- B. If the bidder fails to furnish an appropriate bid guaranty with the bid, the bid shall be rejected as non-responsive. Telegraphic notification of execution of a bid bond does not meet the requirements of a bid guaranty accompanying the bid. Use of a form containing additional material language from that required by statute will not be accepted and bidders are urged to use the bond form contained in the bid documents.
- C. If a surety company bond is furnished, each bond must be accompanied by a Power of Attorney of the agent of the company signing same, showing that said agent is authorized to execute bonds in a sum sufficient to cover the amount of the bond in each particular case. The bond must also be accompanied by a certificate signed by the Superintendent of Division of Insurance, State of Ohio, showing that said company is authorized to do business in Ohio.

6. ADDENDA REQUIREMENTS

- A. The bid documents provide for acknowledgment individually of all official, written addenda to the drawings and/or specifications on the bid. All addenda shall be acknowledged on the bid prior to reading or acceptance of bid. If no addenda are received by the bidder, the word "none" should be shown where specified on the Bid Proposal Form.

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- B. Every effort will be made by the Board to ensure that contractors receive all official, written addenda when issued. Addenda, both by mail and wire facsimile, will be sent to the address or telephone number provided when contract documents were requested. It is unusual for there to be no addenda issued. It is sometimes possible that notwithstanding the Board's good faith best efforts to avoid the possibility that a particular bidder or bidders may be overlooked in transmitting of addenda or that a particular mailing is lost or not delivered to all identified bidders. To protect its interests all bidders are cautioned to inquire in a timely fashion to assure that all addenda have been received and that the cost consequence thereof have been included in the bid submitted.

7. BIDDER'S SIGNATURE

- A. Each Bid Proposal Form and Certification must be signed by each and every person or entity who is making the bid or by each and every bidder's duly authorized agent, using the full and usual signature of the bidding person or entity wherever the bidder's name is requested in the bid documents. The following signature forms must be followed:
1. Individuals: Wherever signatures are requested, the individual bidding shall sign in his or her full legal name.
 - a. Example: John James Smith.
 2. Sole Proprietors: Wherever signatures are requested, the sole proprietor bidding shall sign in his or her full legal name and any applicable fictitious business name (a "doing business as" name or a "dba" name) should appear after that name.
 - a. Example: John James Smith dba Goop Co.
 3. Partnerships: Wherever signatures are requested, a partnership bidding shall include the full legal names of the partners composing the partnership, the state of partnership formation, any applicable fictitious business name of the partnership (a "doing business as" name or a "dba" name), and the name and affiliation of one or more of the general partners signing the bid.
 - a. Example: John James Smith and Kevin Klondike Jones, an Ohio partnership, dba Goop Co., by John James Smith, partner.
 4. Corporations: Every corporate bidder must be licensed to do business in the State of Ohio and must be in good standing with the Ohio Secretary of State at the time for opening bids. Wherever signatures are requested, corporations bidding shall include the full name of the corporation as registered with the Ohio Secretary of State, any applicable fictitious business name of the corporation (a "doing business as" name or a "dba" name), and the name of the authorized corporate officer signing the bid.

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- a. Example: Smith-Jones, Inc. dba Goop Co. by John James Smith, president.

5. All documents requiring signatures must have original signatures. No facsimiles or photocopies of signatures will be accepted.

8. SUBMISSION AND RECEIPT OF BIDS

- A. All bids, including any amendment or withdrawal, must be received in the 9th floor Purchasing Department, Board of County Commissioners, County Administration Building, 451 West Third Street, Dayton, Ohio 45422 no later than the time of opening the bids. Any bid, amendment or withdrawal which has not been actually received by the person opening bids prior to the time of the scheduled bid opening will not be considered. Conditional or qualified bids will be considered non-responsive.
- B. The submitted bid envelope must be directed to the Montgomery County Board of County Commissioners, and endorsed on the outside of the envelope with the project name and full name and address of the bidder.
 1. Bidders must use the Bid Proposal Form furnished by the Board or a copy thereof.
 2. Bidders must use a sealed envelope properly identified as stated above to assure proper handling. If the entire bid does not fit into an envelope, a sealed envelope containing the Bid Proposal Form together with the a proper Bid Guaranty and Performance Bond, as provided for herein, must be enclosed in the properly identified sealed envelope and that envelope shall be firmly and prominently attached to the remainder of the bid documents upon submission.
 3. Submitted bid documents having any erasures or corrections thereon may be rejected unless explained or noted over the signature of the bidder.
 4. Fill in all spaces on the Bid Proposal Form. Leaving blank spaces may make your bid unresponsive. If a particular space in the Bid Proposal Form is not applicable to your bid, indicate "Not applicable," "n/a" or some other similar designation.

9. OFFICIAL CLOCK

- A. The official clock to determine whether bids are submitted before the time at which all bids are due shall be the clock located in the Purchasing Office where the bids are received.

10. INTERPRETATION

- A. Submitted bids shall state the price for each item enumerated in the Bid Proposal Form for the kind of improvement bid upon, except in bids involving alternate bid items in which the bidder has the option of bidding on one or more of said alternates. The unit price for each item must be shown, together with the total amount for each item carried forward. In case of errors or discrepancies, the unit price as shown will govern in the computation of the bid. Failure to comply with the provisions of this section may be deemed sufficient ground for rejection of any bid.
- B. All submitted bids will be compared on the basis of the Engineer's Estimate of quantities of Work to be done and materials to be furnished. These quantities are approximate only, and the Board expressly reserves the right to increase or decrease the same or omit any item that the Board may deem advisable. Bids which exceed the estimate may not be accepted. On Project contracts which will be awarded on the basis of unit prices as submitted in the proposal, the Board will look with disfavor upon a proposal submitted in which the bidder's unit prices are or appear to the Board to be unbalanced. The Board reserves the right to reject any bid which, in its opinion, appears unbalanced.

11. PROCESSING OF BIDS

- A. The Board may, in its sole discretion, do any or all of the following where, in the sole judgment of the Board or its agents, it is in the best interest of the Board to do so:
 - 1. Reject defective or non-responsive bids;
 - 2. Waive any irregularity or clerical error in any and all bids;
 - 3. Accept a part or parts of a bid unless otherwise restricted in the bid documents;
 - 4. Reject any or all bids; or
 - 5. Re-advertise the project for re-bid.
- B. NOTE: The Board SHALL reject bids submitted by any bidder who did not attend the mandatory pre-bid conference.

12. BID EVALUATION

- A. All bids received shall be evaluated using the following three (3) procedures:
 - 1. Bid Document Evaluation - The submitted bid is compared to the requirements found herein and in the bid documents for bid form and

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content. Failure to meet any of the requirements specified in the bid documents may result in disqualification of the bid.

2. Bid Specification Evaluation - The submitted bid is compared to the specifications in the bid documents. Failure to meet any of the requirements specified in the bid documents may result in disqualification of the bid.
3. Price Evaluation - The price proposals in a submitted bid shall be evaluated on the basis of the lowest and best bid pursuant to Ohio Revised Code 307.86. Bids which are not lowest and best pursuant to Ohio Revised Code 307.86 will be disqualified.

B. The bid award shall be made to the bidder(s) whose bid(s):

1. Has not been disqualified through the Bid Document Evaluation.
2. Has not been disqualified through the Bid Specification Evaluation.
3. Has not been disqualified through the Bid Price Evaluation.

C. In determining lowest and best bid both separate bids and combined bids will be considered. Also, all or any combination of Alternates may be accepted in determining the lowest and best bid. Selection will be based on total Project costs. Combined bids for the whole or for two or more kinds of work that are lower than the separate bids in aggregate may be selected as per Ohio Revised Code 153.51, as may be amended.

13. RESPONSIBLE BIDDERS

A. The Board reserves the right to consider all elements entering into the question of determining the responsibility of a bidder pursuant to Ohio Revised Code 9.312.

14. CORRECTION OF ERRORS

A. Corrections of errors in a bid after the bid opening shall not be allowed except for extension and/or addition errors which are clearly evident in the Board's sole discretion. Correction of such errors shall only be allowed if accomplished by 4:00 p.m. on the second working day after the bid opening not counting the day of the bid opening.

15. PREVAILING SCALE OF WAGES

A. The successful bidder must comply with the prevailing rates of wages on public improvements, attached hereto, as ascertained by the Department of Industrial Relations, State of Ohio, and as provided for in Chapter 4115 of the Ohio Revised Code, as may be amended.

16. PUBLIC UTILITIES

- A. Designated on the Drawings in the Contract Documents are utilities and public utility companies, who have or will install facilities within the limits of the Project. The Board does not guarantee that this list includes all public utilities that have facilities or who may install or adjust facilities which may interfere with the Contractor's operations.
- B. Each bidder shall determine for itself all expenses and cost, including any insurance and/or protective services involved in protecting the operation, Board property, public utility and other facilities of any and/or all public utility companies. Compensation for all expenses, including insurance, if required, in connection with all Work on, over, under, or adjacent to the property and facilities of any and/or all of the public utility companies, shall be included in the prices bid for the various items of the Contract.
- C. The submission of a bid for this project shall be prima facie evidence that the bidder has examined the site and contacted all public utility companies, authorities, and municipalities and has included in its bid, under the various items of the proposed contract, compensation for all expenses involved as outlined above. It is further agreed the successful bidder shall meet the requirements of Section 105.07, Cooperation with Utilities of the Ohio Department of Transportation Specifications, as may be amended.
- D. The successful bidder shall make its own arrangements for working on, over, under, and adjacent to the properties of the public utility companies, authorities and municipalities. It shall provide and pay for all safeguards and other services that may be required by these utilities, including aid to construction costs, and it shall conform to their rules, regulations, and requirements at no additional expense to the Board.

17. BUILDING CODE

- A. The successful bidder shall comply in every respect with the latest edition of the Ohio Building Code and the Code's subsequent approved amendments. The successful bidder shall be solely responsible for any damage, or injury, or delay caused to the Board, or other, through any failure or negligence to observe said laws or regulations.

18. MANDATORY PRE-BID CONFERENCE

- A. A mandatory pre-bid conference has been scheduled to provide for identification and discussion of potential problems which might arise during the administration of any subsequent contract. **All potential bidders are required to attend this conference.** No bid will be received from any bidder who does not attend such conference.

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- B. Bidder is aware that bidders who attend the pre-bid meeting without having fully developed an integrated plan for accomplishment of the specifications and their integration into the total design will be at a procedural pre-bid disadvantage to those who do and may possibly assume risks of failure on the project should they become the lowest and best bidder. The bidder is aware that it is the purpose of the pre-bid conference to assist bidders in achieving quality performance on this Project by a full and complete understanding of the design interrelationship of the specifications. Bidder shall treat this matter as if final bids were required on the date of the pre-bid conference. By being so prepared, each bidder is able to raise questions concerning any matter which was unclear in the bidding process or which had to be evaluated on the basis of subjective judgment of the bidder. (All bidders are cautioned to raise these questions.)
- C. Each bidder recognizes that the purpose of the pre-bid conference is to resolve ambiguities, inconsistencies, errors or omissions in the Contract Documents.
- D. The estimate for funding purposes has been disclosed to all bidders in the bid proposal in a further attempt to assure that all bidders understand and agree to the needs of the Board as reflected by the bid documents. The Board cautions all such bidders that the amount is a funding estimate only and is not a reflection of the costs of completion of the Project. All bidders are cautioned that if the bid as calculated at the time of the pre-bid conference is more than one hundred ten percent (110%) of the funds to be made available, that the notice of that fact should be immediately made and, in any event, at least five (5) days prior to the bid opening.
- E. All bidders are cautioned that the completion of the project is of preeminent importance to the Board and that re-solicitation of bids, if made necessary, will create an absolutely intolerable delay and damage to the Board.
- F. At the conclusion of the pre-bid conference, all inquiries shall be reduced to writing and shall be published as an addendum to this bid solicitation, so that all bidders may bid on an equal basis, free from error and with a clear understanding of the requirement of this contract.
 - 1. NOTE: All bidders are cautioned to read Paragraph 1.2.11 of the General Conditions hereof.

19. CONFLICT OF INTEREST

- A. Prospective bidders shall not contact any public employee by any means or method, including by telephone, regarding this specification and the procurement it represents except in the manner indicated above. Failure to comply with this requirement shall result in the disqualification of the bidder.

20. APPLICABLE LAWS

- A. The Revised Code of the state of Ohio, and the applicable resolutions of the Board of County Commissioners for Montgomery County, Ohio (the "Board") insofar as they apply to the laws of competitive bidding, contracts, and purchases are made a part hereof as if fully restated herein. All laws of the United States of America, the state of Ohio, and Montgomery County, Ohio applicable to the products or services discussed herein or to be provided hereby, are also made a part hereof.

21. INTENT

- A. The intent of the bid documents and the agreement stemming therefrom is to include all items necessary for the proper execution and completion of the Work by the successful bidder. The bid documents and the agreement stemming therefrom are complementary, and what is required by one shall be as binding as if required by all. Performance by the successful bidder shall be required only to the extent consistent with the bid documents and the agreement stemming therefrom and reasonably inferable from them all as being necessary to produce the intended results.

22. EQUAL EMPLOYMENT OPPORTUNITY

- A. The successful bidder will be required to certify that they comply with the Board's anti-discrimination policy and the contract evidencing such successful bid will contain a term requiring continued compliance with such policy.

23. INFRINGEMENTS AND INDEMNIFICATIONS

- A. To the fullest extent permitted by law, the successful bidder shall protect, defend, indemnify and hold free and harmless the Board, and any officers, employees, successors, administrators or agents of same, from and against any and all claims, damages, losses, claims of loss, causes of action, penalties, settlements, costs, liabilities and expenses of any kind, including but not limited to attorney fees, arising out of or resulting from any acts or omissions of the successful bidder, its officers, employees, consultants, agents, subcontractors, sub-subcontractors, successors or administrators, negligent or otherwise, and regardless of whether such claims, damages, losses, claims of loss, causes of action, penalties, settlements, costs, liabilities or expense is caused in part by any party indemnified hereunder. The successful bidder also agrees to be responsible for the payment of all damages, settlements, costs and expenses of any kind, including attorney fees, incurred by the Board while the Board defends or pursues any action, cause of action, or claim which arises out the aforementioned acts or omissions. Such obligations include any claims arising out of the use of any patented material, process, article, or device that may enter into the manufacture, construction, or form a part of the work covered by either the order or contract. Such obligations shall not be construed to negate, abridge, or reduce any other rights or obligations of indemnity which would otherwise exist as to a party or person described herein.

24. INSURANCE

- A. Unless otherwise provided in the Contract Documents, the contract stemming from this bid shall require that the successful bidder purchase and maintain a policy of insurance to protect the successful bidder and the Board from claims which may arise out of the contract stemming from this bid. Unless otherwise provided in the Contract Documents, such insurance policy shall be written for not less than one million dollars (\$1,000,000.00) for any person injured in any accident and with a total liability of two million dollars (\$2,000,000.00) for all persons injured in any one accident and in the amount of one million dollars (\$1,000,000.00) for each accident or occurrence as compensation for damage caused to property of others.

25. TIME OF COMPLETION AND LIQUIDATED DAMAGES

- A. Time is of the essence to the Contract Documents and all obligations thereunder. It is important to the Board that the Project be completed as soon as possible consistent with good construction. The Board estimates the project work will be completed in 120 calendar days from the date of the contract. The Board, in determining the lowest and best bid, will take into consideration the time required for completion fixed by the bidder in its proposal.
- B. Since time is of the essence, the successful bidder will agree and acknowledge that (1) Board is entitled to full and beneficial occupancy and use of the completed Work upon expiration of the Contract Time and (2) Board has or will enter into contracts, agreements and commitments based upon the successful bidder achieving Substantial Completion of the Work within the Contract Time. The successful bidder will further agree that if it fails to cause substantial Completion of the Work or any portion of the Work within the Contract Time, the Board will sustain extensive damages and loss as a result of such failure, the exact amount of which will be extremely difficult to ascertain. Therefore, the Board and successful bidder, who will be the "Contractor", will agree in the Contract Documents to the following:
1. If the Contractor fails to achieve Substantial Completion of the Work within the Contract Time and as otherwise required by the Contract Documents, the Board shall be entitled to retain or recover from the Contractor, as liquidated damages, and not as a penalty, the following per diem amounts commencing upon the first day following expiration of the Contract Time and continuing until the actual Date of Substantial Completion. Such liquidated damages are hereby agreed to be a reasonable pre-estimate of damages the Board will incur as a result of delayed completion of the Work: two hundred fifty and 00/100 Dollars (\$250) per day.

26. DISCLOSURE

- A. The contract documents evidencing the successful bid will contain a covenant to be agreed to by the successful bidder that it has complied with the Board's disclosure policy adopted pursuant to Resolution No. 88-1279, dated July 15, 1988, which

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requires anyone contracting with the Board to disclose to the Board any business relationship or financial interest that it has with a Montgomery County, Ohio employee or employee's business, or any business relationship or financial interest that a Montgomery County, Ohio employee has with the contracting party or in the contracting party's business. That contract will also create a continuing obligation to disclose such information to the Board.

27. SAMPLE CONTRACT

- A. Contained in these bid documents is a sample contract document entitled "Construction Contract Agreement." Such contract document is an example of the contract document that the successful bidder will be asked to sign to evidence the Agreement between that successful bidder and the Board stemming from this solicitation. All blanks contained in the sample shall be filled in by the Board before such document is presented to the successful bidder for signature. The actual contract document supplied to the successful bidder may differ from the sample contract document.

28. OFFER TO CONTRACT

- A. Execution of the contract document presented by the Board for execution by the successful bidder shall constitute an offer by the successful bidder to contract with the Board to perform the Work subject to the Contract Documents. Such executed Contract shall be neither accepted nor binding until (1) returned to the Director of the Montgomery County, Ohio, Department of Public Works within ten (10) days of receipt for signature (unless such time is otherwise extended in writing by the Board or its duly authorized agent), (2) certificated by the Auditor of Montgomery County, Ohio, (3) approved by a resolution of the Board, and (4) signed by the Board or the Montgomery County, Ohio Administrator. Such offer to contract shall not be revokable by the Bidder, except as provided by law.

29. BID PROPOSAL DURATION

- A. By submitting your bid you agree to leave your bid proposal firm for sixty (60) days after the bid opening date unless otherwise stated therein.

30. LIABILITY FOR BID PREPARATION

- A. The Board, and any officers, employees, successors, administrators or agents of same, assume no responsibility nor liability for costs incurred in the preparation and/or submission of any bid.
- B. **ALL BIDDERS ARE CAUTIONED TO READ PARAGRAPH 1.2.11 OF THE GENERAL CONDITIONS HEREOF.**

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31. BIDS WILL BE RECEIVED FOR::

Contract

Funding Estimate

Security Camera System Upgrade & Replacement \$367,000

Notice: All bidders are cautioned that the funding estimate represents the monies available. When the bid, as calculated, is more than the funding estimate, the bidder shall provide notice at least five (5) days prior to bid opening.

* * * END OF SECTION * * *

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GENERAL CONDITIONS

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GENERAL CONDITIONS

ARTICLE 1 - GENERAL PROVISIONS

1.1 Basic Definitions

1.1.1 Agreement. The term "Agreement" refers to the Construction Contract Agreement.

1.1.1.1 All definitions and other terms contained in the Agreement shall be incorporated into these General Conditions as if fully rewritten herein or attached hereto.

1.1.2 General Conditions. The term "General Conditions" refers to all of the contract conditions in this document.

1.2 Execution, Correlation, Intent, and Interpretation

1.2.1 Signature Requirements. The Contract Documents shall be signed by the Board and the Contractor as provided in the Agreement and the Contract Documents. If either the Board or Contractor or both do not sign all of the Contract Documents, the Board shall identify such unsigned Documents upon request. Such failure to sign any of the Contract Documents shall in no way void or nullify the signatures of either party upon the Agreement.

1.2.2 Execution Representations. Execution of the Contract by the Contractor is a representation that the Contractor has visited the Contract Site, become familiar with the local conditions under which the Work is to be performed, confirmed the location of relevant utility tie-ins with the required utility provider if the Contract Documents provide that such tie-ins are to be made by the Contractor and correlated personal observations with requirements of the Contract Documents. These representations are in addition to all other representations contained or implied by the Contract Documents. The Contractor and each Subcontractor shall evaluate and satisfy themselves as to the conditions and limitations under which the Work is to be performed, including, without limitation: (1) the location, condition, layout and nature of the Project site and surrounding areas; (2) generally prevailing climatic conditions; (3) anticipated labor supply and costs; (4) availability and cost of materials, tools and equipment; and (5) other similar issues. The Board assumes no responsibility or liability of any kind for the physical condition or safety of the Project site or any improvements located on the Project site. The Contractor shall be solely responsible for providing a safe place for the performance of the Work. The Board shall not be required to make any adjustments in either the Contract Sum or Contract Time in connection with any failure by the Contractor or any Subcontractor to comply with the requirements of this Paragraph 1.2.2.

1.2.3 Intent. The intent of the Contract Documents is to include all items necessary for the proper execution and completion of the Work by the Contractor. The Contract Documents are complementary, and what is required by one shall be as binding as if required by all; performance by the Contractor shall be required only to the extent consistent with the Contract Documents and reasonably inferable from them as being necessary to produce the intended results.

1.2.4 Headings. Organization of the Specifications into divisions, sections and articles and arrangement of Drawings shall not control the Contractor in dividing the Work among

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Subcontractors or in establishing the extent of Work to be performed by any trade. Numbered topical headings, articles, paragraphs, subparagraphs or titles in the Contract Documents are inserted for the convenience of organization and reference and are not intended to affect the interpretation or construction of the terms thereof.

1.2.5 Technical Word Interpretation. Unless otherwise stated in the Contract Documents, words which have well-known technical or construction industry meanings are used in the Contract Documents in accordance with such recognized meanings.

1.2.6 Personal Pronoun and Number Interpretation. All personal pronouns used in the Contract Documents, whether used in the masculine, feminine, or neuter gender, shall include all other genders and, where used in the singular, shall include the plural and vice versa.

1.2.7 Limiting Language Interpretation. The use of the word "including," when following any general statement, term, or matter, shall not be construed to limit such statement, term, or matter to the specific items or matters set forth immediately following such word or to similar items or matters, whether or not non-limiting language (such words as "without limitation" or "but not limited to" or words of similar import) is used with reference thereto, but shall be deemed to refer to all other items or matters that could reasonably fall within the broadest possible scope of such general statement, term or matter.

1.2.8 Approval and Provision Interpretation. When the words "approved," "satisfactory," "proper," or "as directed" are used by the Engineer, approval by the Engineer shall be understood. When the word "provide" including derivatives thereof is used in the Contract Documents, it shall mean to properly fabricate, complete, transport, deliver, install, erect, construct, test and furnish all labor, materials, equipment, apparatus, appurtenances, and all items and expenses necessary to properly complete in place, ready for operation or use under the terms of the Contract Documents.

1.2.9 Knowledge Interpretation. The terms "knowledge," "recognize" and "discover," their respective derivatives and similar terms in the Contract Documents, as used in reference to the Contractor, shall be interpreted to mean that which the Contractor knows or should know, recognizes or should recognize and discovers or should discover in exercising the care, skill and diligence required by the Contract Documents. Analogously, the expression "reasonably inferable" its derivatives and similar terms in the Contract Documents shall be interpreted to mean reasonably inferable by a contractor familiar with the Project and exercising all of the care, skill and diligence required of the Contractor by the Contract Documents.

1.2.10 Persistence Interpretation. The phrase "persistently fails" its derivatives and other similar expressions, as used in reference to the Contractor, shall be interpreted to mean any combination of acts and omissions, which causes the Board or the Engineer to reasonably conclude that the Contractor will not complete the Work within the Contract Time, for the Contract Sum or in substantial compliance with the requirements of the Contract Documents.

1.2.11 Special Interpretive Agreement. The parties hereto agree that in the event it becomes necessary to determine the meaning, scope or interrelationship of any of the provisions of the Contract Documents, the doctrine of *contra proferentum*, that is that the contract shall be construed against the Board, shall not be used. On the contrary, the parties hereto specifically agree that

interpretation shall be based upon a reasonable basis consistent with the provisions and intent of the Contract Documents.

1.3 Ownership and Use of Engineer's Drawings, Specifications and Other Documents

1.3.1 The Drawings, Specifications and other documents are instruments through which the Work to be executed by the Contractor is described. The Contractor may retain one (1) contract record set. Neither the Contractor nor any Subcontractor, Sub-subcontractor or material or equipment supplier shall own or claim a copyright in the Drawings, Specifications and other documents prepared by the Engineer. All copies of the Drawings, Specifications and other documents, except the Contractor's record set and any public records, shall be returned or suitably accounted for, on request by the Board or the Engineer, upon completion of the work. The Drawings, Specifications and other documents prepared by the Engineer which are not public records or owned by the Board, and copies thereof furnished to the Contractor, are for use solely with respect to this Project. They are not to be used by the Contractor or any Subcontractor, Sub-subcontractor or material or equipment supplier on other projects or for additions to this Project outside the scope of the Work without the specific consent of the Board and Engineer. The Contractor, Subcontractors, Sub-subcontractors and material or equipment suppliers are granted a limited license to use and reproduce applicable portions of the Drawings, Specifications and other documents prepared by the Engineer which are not public records or owned by the Board appropriate to and for use in the execution of their Work under the Contract Documents. All copies made under this license shall bear the statutory copyright notice, if any, shown on the Drawings, Specifications and other documents prepared by the Engineer. Submittal or distribution to meet official regulatory requirements or for other purposes in connection with this Project is not to be construed as publication in derogation of any copyright or other reserved rights.

ARTICLE 2 - THE BOARD

2.1 Fees and Information Required from Board

2.1.1 Except for permits and fees which are the responsibility of the Contractor under the Contract Documents, the Board shall secure and pay for other necessary approvals, easements, assessments and similar charges required for construction, use or occupancy of permanent structures or for permanent changes in existing facilities. This is in addition to the other duties and responsibilities of the Board and Contractor enumerated herein.

2.1.2 Material Safety Data. Some of the Board's facilities may have hazardous chemicals on site. If the Contractor wishes to review the Material Safety Data Sheets for the chemicals located where the Contractor will be performing Work, Contractor shall notify the Board in writing and arrangements to review such Data Sheets within a reasonable time will be made. The Contractor shall be required to maintain on site all relevant Material Safety Data Sheets for all chemicals or hazardous materials which are brought on site.

2.1.3 Notice of Commencement. Ohio Revised Code Chapter 1311.01 *et seq.* requires that the Board keep copies of its Notice of Commencement on file and available to the public. Such Notice of Commencement shall be on file and available to the Contractor, Subcontractors, Sub-subcontractors, Engineer and the public in the Montgomery County Department of Public Works,

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Montgomery County Administration Building, P.O. Box 972, 451 West Third Street, Seventh Floor,
Dayton, Ohio 45422-1403.

2.2 Board's Right to Stop the Work

2.2.1 If the Contractor fails to correct the Work which is not in accordance with the requirements of the Contract Documents as required by Paragraph 12.2 or persistently fails to carry out Work in accordance with the Contract Documents, the Board, by written order, may order the Contractor to stop the Work, or any portion thereof, until the cause for such order has been eliminated and, in the Board's sole discretion, contact the surety, if any, though there shall not be any obligation to do so; however, the right of the Board to stop the Work shall not give rise to a duty on the part of the Board to exercise this right for the benefit of the Contractor or any other person or entity, except to the extent required by Subparagraph 6.1.3.

2.3 Board's Right to Carry Out Work

2.3.1 If the Contractor defaults or neglects to carry out the Work in accordance with the Contract Documents and fails within a seven (7) day period after receipt of written notice from the Board to commence and continue correction of such default or neglect with diligence and promptness, the Board may, without prejudice to any other remedies the Board may have, correct such deficiencies and, in the Board's sole discretion, contact the surety, if any, though there shall not be any obligation to do so. In such case an appropriate Change Order shall be issued deducting from payments then or thereafter due the Contractor the cost of correcting such deficiencies, including compensation for the Engineer's additional services and expenses made necessary by such default, neglect or failure. If payments then or thereafter due the Contractor are not sufficient to cover such amounts, the Contractor shall pay the difference to the Board.

ARTICLE 3 - CONTRACTOR

3.1 Review of Contract Documents and Field Conditions by Contractor

3.1.1 The Contractor shall carefully study and compare the Contract Documents with each other and with information furnished by the Board and Engineer and shall at once report to the Board and Engineer errors, inconsistencies or omissions discovered. Minor errors, inconsistencies or omissions in the Contract Documents shall not relieve the Contractor from performing the tasks generally provided for by the Contract Documents. The Contractor shall be liable to the Board or Engineer for damage resulting from errors, inconsistencies or omissions in the Contract Documents of which the Contractor knew or should have known had the Contractor used reasonable care in reviewing the Contract Documents. Notice of any error, inconsistency or omission in the Contract Documents which the Engineer knew or should have known must be given to the Engineer and Board at or before the pre-bid conference. If the Contractor performs any construction activity where it knows or should have known it involves an error, inconsistency or omission in the Contract Documents without giving notice to the Board and Engineer at or before the pre-bid conference, the Contractor shall assume appropriate responsibility and liability for such performance and shall bear an appropriate amount of the attributable costs for correction, including, but not limited to, attorney fees, if any.

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3.1.2 The Contractor shall take field measurements and verify field conditions and shall carefully compare such field measurements and conditions and other information known to the Contractor with the Contract Documents before commencing activities. Errors, inconsistencies or omissions discovered shall be reported to the Engineer and Board at once. Exactness of grades, elevations, dimensions, or locations given on any Drawings issued by the Engineer or Board, or the work installed by other contractors, is not guaranteed by either the Board or Engineer. The Contractor shall, therefore, satisfy itself as to the accuracy of all grades, elevations, dimensions, or locations. In all cases of interconnection of the Contractor's Work with existing or other work, Contractor shall verify at the site all dimensions relating to such existing or other work. Any errors due to the Contractor's failure to so verify all such grades, elevations, dimensions or locations shall be promptly rectified by the Contractor at no additional cost to the Board.

3.1.3 The Contractor shall perform the Work in accordance with the Contract Documents and submittals approved pursuant to Paragraph 3.11.

3.1.4 Except as to any reported errors, inconsistencies or omissions and to concealed or unknown conditions defined in Paragraph 4.2.7, by executing the Agreement, the Contractor represents the following:

3.1.4.1 The Contract Documents are sufficiently complete and detailed for the Contractor to (1) perform the Work required to produce the results intended by the Contract Documents and (2) comply with all the requirements of the Contract Documents.

3.1.4.2 The Work required by the Contract Documents, including, without limitation, all construction details, construction means, methods, procedures and techniques necessary to perform the Work, use of materials, selection of equipment and requirements of product manufacturers are consistent with: (1) good and sound practices within the construction industry; (2) generally prevailing and accepted industry standards applicable to Work; (3) requirements of any warranties applicable to the Work; and (4) all laws, ordinances, regulations, rules and orders which bear upon the Contractor's performance of the Work.

3.2 Supervision and Construction Procedures

3.2.1 The Contractor shall supervise and direct the Work, using the Contractor's best skill and attention. The Contractor shall be solely responsible for and have control over construction means, methods, techniques, sequences and procedures and for coordinating all portions of the Work under the Contract, unless Contract Documents give other specific instructions concerning these matters.

3.2.2 The Contractor shall be responsible to the Board for acts and omissions of the Contractor's employees, Subcontractors and their agents and employees and any entity or other persons performing portions of the Work under a contract with the Contractor.

3.2.3 The Contractor shall not be relieved of obligations to perform the Work in accordance with the Contract Documents either by activities or duties of the Engineer in the Engineer's

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administration of the Contract, or by tests, inspections or approvals required or performed by Persons other than the Contractor.

3.2.4 The Contractor shall be responsible for inspection of portions of Work already performed under this Contract to determine that such portions are in proper condition to receive subsequent Work.

3.3 Labor and Materials

3.3.1 Unless otherwise provided in the Contract Documents, the Contractor shall provide and pay for labor, materials, equipment, tools, construction equipment and machinery, water, heat, utilities, transportation, parking, restrooms and other facilities and services necessary for proper execution and completion of the Work, whether temporary or permanent, and whether or not incorporated or to be incorporated in the Work. Unless otherwise provided for in the Contract Documents, as among the various contractors, water, heat, utilities, restrooms and other necessary or common facilities shall be the responsibility of the Coordinating Contractor. Unless otherwise provided for in the Contract Documents, each separate contractor shall be responsible for all of its own telephone charges including, but not limited to, any installation and line charges, taxes, telephones, long distance and local service. The Board shall not be responsible for any heat, water, utilities or other supplies or facilities required due to any weather condition, or any weather induced delay, no matter how unusual or unexpected the weather condition, unless caused by weather related calamitous events of catastrophic proportions.

3.3.2 The Contractor shall enforce strict discipline and good order among the Contractor's employees and other persons carrying out the Contract. The Contractor shall not permit employment of persons not skilled in tasks assigned to them.

3.3.3 The Contractor accepts full responsibility for payment of all unemployment compensation, insurance premiums, workers' compensation premiums, income tax deductions, prevailing wages, pension deductions, and any and all other taxes or payroll deductions required for the Contractor and all employees engaged by the Contractor for the performance of the Work. The Contractor shall also ensure that all Subcontractors, Sub-subcontractors, vendors and other material suppliers shall also comply with all such requirements.

3.3.4 The Contractor accepts full responsibility for compliance with all MBE, WBE and EEO requirements. The Contractor shall also ensure that all Subcontractors, Sub-subcontractors, vendors and other material suppliers also comply with all such requirements.

3.3.5 The Contractor shall only employ labor on the Project or in connection with the Work capable of working harmoniously with all trades, crafts and any other individuals associated with the Project. The Contractor shall also use its best efforts to minimize the likelihood of any strike, work stoppage or other labor disturbance.

3.3.5.1 For any of the Work to be performed by trade unions, the Contractor shall make all necessary arrangements to reconcile, without delay, damage or cost to the Board and without recourse to the Engineer or Board, any conflict between the Contract Documents and any agreements or regulations of any

kind at any time in force among members or councils which regulate or distinguish what activities shall not be included in the work of any particular trade.

- 3.3.5.2 In case the progress of the Work is affected by any undue delay in furnishing or installing any items or materials or equipment required under the Contract Documents because of such conflict involving any such labor agreement or regulation, the Board may require that other material or equipment of equal kind and quality be provided pursuant to a Change Order or Construction Change Directive.

3.4 Warranty

3.4.1 The Contractor warrants to the Board and Engineer that materials and equipment furnished under the Contract will be of good quality and new unless otherwise required or permitted by the Contract Documents, that the Work will be free from defects not inherent in the quality required or permitted, that the Work will be fit for the purpose for which it was intended, and that the Work will conform with the requirements of the Contract Documents. Work not conforming to these requirements, including substitutions not properly approved and authorized, shall be considered defective. The Contractor's warranty excludes remedy for damage or defect caused by abuse, modifications not executed by Contractor, improper or insufficient maintenance (except to the extent provided by the Contract Documents), improper operation, or normal wear and tear under normal usage. If required by the Board or Engineer, the Contractor shall furnish satisfactory evidence as to the kind and quality of materials and equipment used.

3.4.2 The Contractor warrants to the Board and Engineer that materials and equipment furnished under the Contract will be of good quality and new unless otherwise required or permitted by the Contract Documents, that the Work will be free from defects not inherent in the quality required or permitted, that the Work will be fit for the purpose for which it was intended, and that the Work will conform with the requirements of the Contract Documents. Work not conforming to these requirements, including substitutions not properly approved and authorized, shall be considered defective. The Contractor's warranty excludes remedy for damage or defect caused by abuse, modifications not executed by Contractor, improper or insufficient maintenance (except to the extent provided by the Contract Documents), improper operation, or normal wear and tear under normal usage. If required by the Board or Engineer, the Contractor shall furnish satisfactory evidence as to the kind and quality of materials and equipment used. The Contractor agrees to assign to the Board at the time of final completion of the Work, any and all manufacturer's warranties relating to materials and labor used in the Work and further agrees to perform the Work in such manner so as to preserve any and all such manufacturer's warranties.

3.4.3 In addition to the other terms herein, the Contractor specifically agrees to and hereby represents that it is aware of the additional warranty provisions found in Paragraph 12.2.

3.5 Taxes

3.5.1 The Contractor shall pay sales, consumer, use and similar taxes for the Work or portions thereof provided by the Contractor which are legally enacted when bids are received or negotiations concluded, whether or not yet effective or merely scheduled to go into effect.

3.6 Permits, Fees and Notices

3.6.1 Unless otherwise provided in the Contract Documents, the Contractor shall secure and pay for the building permit and other permits and governmental fees, licenses, review fees, and inspections necessary for proper execution and completion of the Work. All connection charges, assessments or inspection fees as may be imposed by any governmental agency or utility company are included in the Contract Sum and shall be the Contractor's responsibility. As among separate contractors, if any, unless otherwise provided in the Contract Documents, the Coordinating Contractor shall secure and pay for all general permits substantially covering Work involving more than one (1) separate contractor, regardless of whether the Coordinating Contractor's Work is subject to that permit. The Contract Sum for the Coordinating Contractor shall be adjusted to reflect the difference between the actual cost of such general permits involving other contractors and the cost of such general permits based upon the published project estimates for other contractors.

3.6.2 The Contractor shall comply with and give notices required by laws, ordinances, rules, regulations, lawful orders and all other requirements of public authorities bearing on performance of the Work. The Contractor shall also obtain and pay all charges and costs, including repair costs, stemming from approvals and implementation of street, alley and sidewalk closings, temporary construction easements, parking meter removal and replacement, street sign removal and replacement, street lighting removal and replacement, temporary fences and barricades, and all other similar matters as may be necessary or appropriate from time to time for the performance of the Work.

3.6.3 It is not the Contractor's responsibility to ascertain that the Contract Documents are in accordance with applicable laws, statutes, ordinances, building codes, and rules and regulations. However, if the Contractor knows or should know that portions of the Contract Documents are at variance therewith, the Contractor shall promptly notify the Engineer and Board in writing, and necessary changes shall be accomplished by appropriate Modification unless such laws, statutes, ordinances, building codes, and rules and regulations bear upon the performance of the Work.

3.6.4 If the Contractor performs Work it knows or should know is contrary to laws, statutes, ordinances, building codes, and rules and regulations without such notice to the Engineer and Board, the Contractor shall assume full responsibility for such Work and shall bear all attributable costs including, but not limited to, attorney fees. The Contractor shall notify the Board and the Engineer, in writing, immediately upon discovery of any violation of the Building Code in the Contract Documents and only such notification will relieve the Contractor of responsibility under this Subparagraph 3.6.4 for violations inherent in the Contract Documents.

3.7 Allowances

The Contractor shall include in the Contract Sum all allowances stated in the Contract Documents. Items covered by allowances shall be supplied for such amounts and by such persons or entities as the Board may direct.

3.7.2 Unless otherwise provided in the Contract Documents:

- 3.7.2.1 allowances shall cover the cost to the Contractor of materials and equipment delivered at the site and all required taxes, less applicable trade discounts;
- 3.7.2.2 Contractor's costs for unloading and handling at the site, labor, installation costs, overhead, profit and other expenses contemplated for stated allowance amounts shall be included in the Contract Sum and not in the allowances;
- 3.7.2.3 whenever costs are less than allowances, the Contract Sum shall be adjusted accordingly by Change Order. The amount of the Change Order shall reflect (1) the difference between actual costs and the allowances under Clause 3.7.2.1 and (2) changes in Contractor's costs under Clause 3.7.2.2.

3.8 Superintendent

3.8.1 The Contractor shall employ a competent superintendent, with the Contractor's authority to act in his behalf, and necessary assistants who shall be in attendance at the Project site during performance of the Work. The superintendent shall be satisfactory to the Board. The superintendent shall represent the Contractor, and communications given to the superintendent shall be as binding as if given to the Contractor. Communications shall be confirmed in writing by the Contractor upon written request. The Board shall be advised in writing of the superintendent's name, local address, telephone numbers, pager access if any, and limits of authority. This written advice is to be kept current during the duration of the Contract Time.

3.9 Contractor's Construction Schedules and Daily Reports

3.9.1 The Contractor, within ten (10) days after being awarded the Contract, shall prepare and submit for the Board's and Engineer's information a Contractor's construction schedule for the Work. The schedule shall not exceed time limits current under the Contract Documents, shall be revised at appropriate intervals as required by the conditions of the Work and Project, shall be related to the entire Project to the extent required by the Contract Documents, and shall provide for expeditious and practicable execution of the Work. The schedule shall be a bar-chart type progress schedule indicating a time bar for each significant category or unit of the work to be performed at the site. The schedule shall be arranged to indicate required sequencing of units of the Work and to show time allowances for submittals, inspections and similar time margins. Other contractors shall be contacted to assist in the preparation of the schedule.

3.9.2 The Contractor shall prepare and keep current, for the Board's and Engineer's approval, a schedule of submittals which is coordinated with the Contractor's construction schedule and allows the Board and Engineer reasonable time to review submittals.

3.9.3 The Contractor shall conform to the most recent schedules.

3.9.4 The Contractor shall complete in ink and submit to the Board detailed daily reports in the form supplied by the Board indicating, among other things, the number of men, the amount of equipment used, weather conditions, special conditions, visitors, deliveries, work activities, delays, and the date of the previous daily report. Each provision on said report shall be annotated in such a manner as to report all activity at the site under each heading of the report or indicate that no activity of that type occurred on that report date. Such daily reports shall be submitted to the Board for each day that work is performed on the Project, without regard to the fact that such day was not a normal work day, at the location the Board designates, by the end of the next business day following the day which the report describes.

3.9.5 The Contractor's on-site superintendent shall be personally responsible for assuring that each such daily report is accurate and complete and reports all relevant data (including data from Subcontractors, Sub-Subcontractors, vendors and material suppliers) which affects the time of performance of the Project or the cost of the Project and the signature of the Contractor's on-site superintendent on each daily report shall constitute a warranty to the Board on behalf of and with the authority of the Contractor that all such data is current, accurate and complete as of the date of that report.

3.10 Documents and Samples at the Site

3.10.1 The Contractor shall maintain at the site for the Board one (1) record copy of the Drawings, Specifications, addenda, schedules, Change Orders, Construction Change Directives and other Modifications, in good order and marked currently to record changes and selections made during construction and containing all governmental approvals, stamps, signatures and comments and, in addition, shall maintain in good order and marked currently all approved Shop Drawings, Product Data, Samples and similar required submittals. These shall be available to the Engineer and Board at all times and shall be delivered to the Engineer for transmittal to the Board upon completion of the Work.

3.11 Shop Drawings, Product Data and Samples

3.11.1 Shop Drawings are drawings, diagrams, schedules and other data specially prepared for the Work by the Contractor or a Subcontractor, Sub-Subcontractor, manufacturer, supplier or distributor to illustrate some portion of the Work. Within ten (10) days after execution of the Agreement, Contractor shall submit a schedule of shop drawings to the Board.

3.11.2 Product Data are illustrations, standard schedules, performance charts, instructions, brochures, diagrams and other information furnished by the Contractor to illustrate materials or equipment for some portion of the Work.

3.11.3 Samples are physical examples which illustrate materials, equipment or workmanship and establish standards by which the Work will be judged.

3.11.4 Shop Drawings, Product Data, Samples, and similar submittals are not Contract Documents. The purpose of their submittal is to demonstrate for those portions of the Work for which submittals

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are required the way the Contractor proposes to conform to the information given and the design concept expressed in the Contract Documents. Review by the Engineer and Board is subject to the limitations of Subparagraph 4.1.7.

3.11.5 The Contractor shall review, approve and submit to the Engineer and Board Shop Drawings, Product Data, Samples and similar submittals required by the Contract Documents with reasonable promptness and in such sequence as to cause no delay in the Work or in the activities of the Board or of separate contractors. Submittals made by the Contractor which are not required by the Contract Documents may be returned without action.

3.11.6 The Contractor shall perform no portion of the Work requiring submittal and review of Shop Drawings, Product Data, Samples or similar submittals until the respective submittal has been approved by the Engineer and Board. Such Work shall be in accordance with approved submittals.

3.11.7 By approving and submitting Shop Drawings, Product Data, Samples and similar submittals, the Contractor represents that the Contractor has determined and verified materials, field measurements and field construction criteria related thereto, or will do so, and has scheduled and coordinated the information contained within such submittals with the requirements of the Work and of the Contract Documents.

3.11.8 The Contractor shall not be relieved of responsibility for deviations from requirements of the Contract Documents by the Board's or Engineer's approval of Shop Drawings, Product Data, Samples or similar submittals unless the Contractor has specifically informed the Board and the Engineer in writing of such deviation at the time of submittal and the Board and the Engineer have given written approval to the specific deviation. The Contractor shall not be relieved of responsibility for errors or omissions in Shop Drawings, Product Data, Samples or similar submittals by the Board's or the Engineer's approval thereof.

3.11.9 The Contractor shall direct specific attention, in writing or on resubmitted Shop Drawings, Product Data, Samples or similar submittals, to revisions other than those requested by the Engineer or Board on previous submittals.

3.11.10 Informational submittals upon which the Board and Engineer are not expected to take responsive action may be so identified in the Contract Documents.

3.11.11 When professional certification of performance criteria of materials, systems, or equipment is required by the Contract Documents, the Contractor shall provide the person or party providing the certification with full information on the relevant performance requirements and on the materials, systems, or equipment that are expected to operate at the Project site.

3.11.12 All Shop Drawings for any Engineering, structural, mechanical or electrical work must be submitted to, and approved by the Engineer and Board. The Contractor represents and warrants that all Shop Drawings shall be prepared by persons and entities possessing expertise and experience in the trade for which the Shop Drawing is prepared and by a licensed professional if so required by the Engineer, Board or applicable law.

3.11.13 Special Provision of Material Importance. This is a special provision relating to enforcement of the Contractor's responsibility for Shop Drawings, Product Data, Samples or similar submittals where such Shop Drawings, Product Data, Samples or similar submittals are to be subsequently utilized in final construction of this project: THE CONTRACTOR NOTES THE CONSPICUOUS NATURE OF THIS PROVISION. THE CONTRACTOR AGREES THAT THESE PROVISIONS ARE MATERIAL PROVISIONS AND ARE TO BE ENFORCED, IN THE EVENT OF CONTROVERSY (IF LEGALLY PERMISSIBLE AND CONSISTENT WITH THE INTENT OF THIS SPECIAL CATEGORICAL PROVISION) IN SUCH A MANNER AS TO PLACE UPON THE CONTRACTOR FULL, COMPLETE AND TOTAL RESPONSIBILITY FOR THE SUBSEQUENT USABILITY AND/OR COST OF REALIZING USABILITY OF ANY AND ALL PRELIMINARY SUBMISSIONS BY THE CONTRACTOR, WITHOUT REGARD TO ANY ACTION, OR FAILURE TO ACT IN CONNECTION THEREWITH, BY THE BOARD, ITS REPRESENTATIVES, AGENTS, EMPLOYEES, SUCCESSORS OR ASSIGNS. TO FACILITATE THE ASSUMPTION OF RESPONSIBILITY BY THE CONTRACTOR UNDER THIS PARAGRAPH, ALL SHOP DRAWINGS, PRODUCT DATA, SAMPLES OR SIMILAR SUBMITTALS SHALL CONTAIN ON A COVER PAGE, SIGNED BY THE CONTRACTOR'S REPRESENTATIVE PREVIOUSLY DESIGNATED BY THE CONTRACTOR TO THE BOARD IN WRITING FOR SUCH PURPOSE, THE FOLLOWING LEGEND:

"A. This submittal is made under the provision of Paragraph 3.11.13 of the General Conditions of the Contract Documents between the Contractor and the Board of County Commissioners for Montgomery County, Ohio (the "Board"). Contractor makes an express warranty to the Board, by express affirmation, that if installed into the project, the work which forms the basis of this submittal will conform to the design requirements of the Contract, as that design has been contractually agreed to and which is the basis of the bargain between the parties thereto.

B. It is the purpose of this submittal to describe the goods proposed for use by the Contractor and to demonstrate conformance of that description to the requirements of the Contract.

C. To the extent necessary, the Contractor, by making this submittal, warrants that the whole of the goods shall conform to the submittal.

D. At the time of this submission, the Contractor acknowledges that he is aware that the purpose of this submission is to induce the Board to authorize the use of this work for purposes of Contract compliance by the Contractor, and, further that the Board, in doing so, relies upon the skill, judgment and integrity of the Contractor as to the compliance of this submitted work to the requirements of the Contract. Contractor hereby acknowledges that it has by its own resources found and selected the work submitted herewith and that it is suitable for the purpose of being fit and suitable for use in the final construction under this Contract.

3.12 Use of Site

3.12.1 The Contractor shall confine operations at the site to areas permitted by law, ordinances, permits and the Contract Documents and shall not unreasonably encumber the site with materials or equipment. Unless otherwise provided in the Contract Documents, the Coordinating Contractor shall be responsible for securing and paying for any permits or other fees necessary for the obstruction of streets, alleys, drives and other roads, which obstruction shall be kept to a minimum

with minimum interference to traffic and other facilities. Streets, alleys, drives and other roads adjacent to the site shall be maintained free of mud and construction debris created by the construction process.

3.12.2 Only materials and equipment which are to be used directly in the Work shall be brought to and stored on the Project site by the Contractor. After equipment is no longer required for the Work, it shall be promptly removed from the Project site. Protection of construction materials and equipment stored at the Project site from weather, theft, damage and all other adversity is solely the responsibility of the Contractor.

3.12.3 The Contractor and any entity for whom the Contractor is responsible shall not erect any sign on the Project site without the prior written consent of the Board, which may be withheld in the sole discretion of the Board.

3.12.4 The Contractor shall ensure that the Work, at all times, is performed in a manner that affords reasonable access, both vehicular and pedestrian, to the site of the Work and all adjacent areas. The Work shall be performed, to the fullest extent reasonably possible, in such a manner that public areas adjacent to the site of the Work shall be free from all debris, building materials and equipment likely to cause hazardous conditions. Without limitation of any other provision of the Contract Documents, the Contractor shall use its best efforts to minimize any interference with the occupancy or beneficial use of (1) any areas and buildings adjacent to the site of the Work or (2) the building in the event of partial occupancy, as more particularly described elsewhere in the Contract Documents.

3.13 Cutting and Patching

3.13.1 The Contractor shall be responsible for cutting, fitting or patching required to complete the Work or to make its parts fit together properly.

3.13.2 The Contractor shall not damage or endanger a portion of the Work or fully or partially completed construction of the Board or separate contractors by cutting, patching or otherwise altering such construction, or by excavation. The Contractor shall not cut or otherwise alter such construction by the Board or a separate contractor except with written consent of the Board and of such separate contractor. The Contractor shall not unreasonably withhold from the Board or a separate contractor the Contractor's consent to cutting or otherwise altering the Work.

3.14 Cleaning Up

3.14.1 The Contractor shall keep the premises and surrounding area free from accumulation of waste materials or rubbish caused by operations under the Contract. At completion of the Work the Contractor shall remove from and about the Project waste materials, rubbish, the Contractor's tools, construction equipment, machinery and surplus materials.

3.14.2 If the Contractor fails to clean up as provided in the Contract Documents, the Board may do so and the cost thereof shall be charged to the Contractor.

3.15 Access to Work

3.15.1 The Contractor shall provide the Board and the Engineer access to the Work in preparation and progress wherever located.

3.16 Royalties and Patents

3.16.1 The Contractor shall pay all royalties and license fees. The Contractor shall defend suits or claims for infringement of patent rights and shall hold the Board and Engineer harmless from loss on account thereof, but shall not be responsible for such defense or loss when such suit or claim stems solely from a particular design, process or product of a particular manufacturer or manufacturers which is specifically required by the Contract Documents. However, if the Contractor has reason to believe that the required design, process or product is an infringement of a patent, the Contractor shall be responsible for such loss unless such information is promptly furnished to the Engineer and the Board.

3.17 Indemnification

3.17.1 To the fullest extent permitted by law, the Contractor shall protect, defend, indemnify and hold free and harmless the Board, Engineer, Engineer's consultants and any officers, employees, successors, administrators or agents of same from and against any and all claims, damages, losses, claims of loss, causes of action, penalties, settlements, costs, liabilities and expenses of any kind, including but not limited to attorney fees, arising out of or resulting from any acts or omissions of the Contractor, its officers, employees, consultants, agents, subcontractors, sub-subcontractors, successors or administrators, negligent or otherwise, and regardless of whether such claims, damages, losses, claims of loss, causes of action, penalties, settlements, costs, liabilities or expense is caused in part by any party indemnified hereunder.

3.17.1.1 The Contractor agrees to be responsible for the payment of all damages, settlements, costs and expenses of any kind, including attorney fees, incurred by the Board while the Board defends or pursues any action, cause of action, or claim which arises out the aforementioned acts or omissions. Such obligations shall not be construed to negate, abridge, or reduce other rights or obligations of indemnity which would otherwise exist as to a party or person described in this Paragraph 3.17.

3.17.2 In claims against any person or entity indemnified under this Paragraph 3.17 by an employee of the Contractor, a Subcontractor, a Sub-subcontractor, anyone directly or indirectly employed by them or anyone for whose acts they may be liable, the indemnification obligation under this Paragraph 3.17 shall not be limited by a limitation on amount or type of damages, compensation or benefits payable by or for the Contractor, a Subcontractor, or a Sub-subcontractor under workers' or workmen's compensation acts, disability benefit acts or other employee benefit acts.

3.18 Liquidated Damages and Time

3.18.1 Time is of the essence to the Contract Documents and all obligations thereunder. Contractor agrees that Liquidated Damages shall be available to the Board pursuant to the terms of the Agreement.

3.19 Notice Requirements

3.19.1 In a variety of Articles set forth in this Contract, Contractor is required to give written notice to the Board of the occurrence of events for which the Board has assumed the legal or contractual responsibility. The giving of such notice is a CONDITION PRECEDENT to any liability of the Board. The failure to provide the written notice, when occurrence become known to the Contractor, or the information is reasonably available to the Contractor, shall release the Board from any liability on any claim for adjustment of the Contract or for the breach thereof by the Board, THE FORM FOR THE GIVING OF NOTICE UNDER THIS CONTRACT IS ATTACHED to this Contract as Attachment 2 hereto.

3.20 Submittals

3.20.1 Various provisions of the Contract require the Contractor to obtain permission to use Equipment, material or means and methods to fulfill its responsibility under the contract. Unless otherwise set forth in the Contract by specific recitation, these requirements are Mixed Design and Performance Specifications. In order for the Contractor to fully understand the nature of the warranty made to the Board in the submittal process under which the permission of the Board is obtained to use the submittal subject matter the following shall apply to all submittals.

3.20.2 When the contractor makes a "Submittal" to describe how it will fulfill its responsibility under the Contract by submitting Shop Drawings, Submittals, Samples, Cuts, Catalogues, Models, Samples or other preliminary data, when such submittals are to be subsequently utilized in the final construction of this project, the following provisions shall apply:

THE CONTRACTOR NOTES THE CONSPICUOUS NATURE OF THIS PROVISION. THE CONTRACTOR AGREES THAT THESE PROVISIONS ARE MATERIAL PROVISIONS AND ARE TO BE ENFORCED, IN THE EVENT OF CONTROVERSY, IN SUCH A MANNER AS TO PLACE UPON THE CONTRACTOR THE FULL, COMPLETE AND TOTAL RESPONSIBILITY FOR THE APPROVED SUBMITTAL FOR THE PURPOSE OF FULFILLING THE REQUIREMENTS OF THE CONTRACT FOR THE SUBSEQUENT SUITABILITY AND/OR THE COST OF REALIZING USEABILITY OF ANY PRELIMINARY SUBMISSIONS BY THE CONTRACTOR, WITHOUT REGARD TO ANY ACTION OR FAILURE TO ACT IN CONNECTION THEREWITH BY THE BOARD OR ITS DULY AUTHORIZED REPRESENTATIVE.

2. TO FACILITATE THE ASSUMPTION OF RESPONSIBILITY BY THE CONTRACTOR UNDER THIS ARTICLE, EACH PRELIMINARY SUBMITTAL BY THE CONTRACTOR SHALL CONTAIN AS A COVER PAGE THERETO, THE FOLLOWING LEGEND. THIS COVER PAGE SHALL BE SIGNED OR INITIALED BY A REPRESENTATIVE OF THE CONTRACTOR PREVIOUSLY DESIGNATED BY THE CONTRACTOR TO THE BOARD, IN WRITING, FOR SUCH PURPOSE. THE CONTRACTOR SHALL REQUEST SUBMITTAL APPROVAL AND WARRANT THE SUITABILITY OF THE EQUIPMENT OR MATERIAL SET

**FORTH FOR COMPLIANCE WITH THE REQUIREMENTS OF THE CONTRACT
PROVISIONS FOR WHICH THIS SUBMITTAL IS INTENDED TO BE USED.**

- a. This submittal is made under the provisions of Article 13 of Quality Control requirements of the General Conditions of the Contract between these parties. Contractor makes an express warranty to the Board, by express affirmation, that if installed into or made a part of the project, the work which forms the basis of this submittal will conform to the design requirements of the contract, as that design has been agreed to and which is the basis of the bargain between the parties hereto.
- b. It is the purpose of this submittal to describe the goods proposed for use by the Contractor and to demonstrate conformance of that description to the Contract Requirement.
- c. To the extent necessary, the Contractor by making this submittal, warrants that the whole of the goods shall conform to the submittal.
- d. At the time of this submission, the Contractor acknowledges that it is aware that the purpose of this Submittal is to induce the Board to authorize the use of this work for purposes of Contract compliance by the Contractor, and further, that the Board, in doing so, relies upon the skill, judgment and integrity of the Contractor as to the compliance of this submitted work to the requirements of the Contract. Contractor hereby acknowledges that it has, through the use of its own resources, found and selected the work submitted herewith and that the work submitted is usable for the purpose of being fit and suitable in the final construction under this Contract.
- e. Notwithstanding any provision of this Contract to the contrary, the Contractor hereby notifies the Board that:

(1)

(2)

(3)

(4) (Or more)

features of the Submittal ARE NOT IN CONFORMANCE with Contract Requirements, but nevertheless asks approval thereof.

SIGNED: _____

Authorized Representative

3.20.3 Contractor understands that in fulfilling its responsibility under this Article, that it may need or be required to obtain the services of a Professional Design Consultant in order to properly present any submittal made hereunder. If the Contractor determines that such services are needed for the

purposes of carrying out the means and methods selected by the Contractor, then such a Professional Design Consultant must be included in the bid submitted.

ARTICLE 4 - ADMINISTRATION OF THE CONTRACT

4.1 Engineers Administration of the Contract

4.1.1 The Engineer will provide administration of the Contract as described in the Contract Documents, and will be the Board's representative (1) during construction, (2) until final payment is due and (3) with the Board's concurrence, from time to time during the correction period described in Paragraph 12.2. The Engineer will have authority to act on behalf of the Board only to the extent provided in the Contract Documents, unless otherwise modified in a written instrument in accordance with the other provisions of the Contract. This appointment of the Engineer as the Board's representative shall not negate the appointment of the Board's representative pursuant to the Agreement.

4.1.2 The Engineer will visit the site at intervals appropriate to the state of construction to become generally familiar with the progress and quality of the completed Work and to determine in general if the Work is being performed in a manner indicating that the Work, when completed, will be in accordance with the Contract Documents. On the basis of on-site observations as an Engineer, the Engineer will keep the Board informed of progress of the Work, and will endeavor to guard the Board against defects and deficiencies in the Work.

4.1.3 The Engineer will not have control over or charge of construction means, methods, techniques, sequences or procedures, or for safety precautions and programs in connection with the Work, since these are solely the Contractor's responsibility as provided in Paragraph 3.2 and Article 10. The Engineer will not be responsible for the Contractor's failure to carry out the Work in accordance with the Contract Documents. The Engineer will not have control over or charge of and will not be responsible for acts or omissions of the Contractor, Subcontractors, Sub-subcontractors, or their agents or employees, or of any other persons performing portions of the Work.

4.1.4 Communications Facilitating Contract Administration. Except as otherwise provided in the Contract Documents or when direct communications have been specially authorized, the Board and Contractor shall endeavor to communicate through the Engineer. Communications by and with the Engineer's consultants shall be through the Engineer. Communications with the Subcontractors, Sub-subcontractors and material suppliers shall be through the Contractor. Communication by and with separate contractors shall be through the Engineer. Communications with the Board otherwise necessary shall be through the Board's representative pursuant to the Agreement. Written notices shall be served pursuant to Paragraph 13.1.

4.1.5 Based on the Engineer's observations and evaluations of the Contractor's Applications for Payment, the Engineer will review and recommend certification of the amounts due the Contractor to the Board whereby, based upon the Board's observations and evaluations of the Contractor's Applications for Payment, the Board will issue Certificates for Payment in such amounts the Board determines to be due.

4.1.6 The Engineer and Board will each have the separate authority to reject Work which does not conform to the Contract Documents. Whenever the Engineer or Board considers it necessary or advisable for implementation of the intent of the Contract Documents, the Engineer and Board will have authority to require additional inspection or testing of the Work in accordance with Subparagraphs 13.3.2 and 13.3.3, whether or not such Work is fabricated, installed or completed. However, neither this authority of the Engineer and Board nor a decision made in good faith either to exercise or not to exercise such authority shall give rise to a duty or responsibility of the Engineer or Board to the Contractor, Subcontractors, Sub-subcontractors, material and equipment suppliers, their agents or employees, or other persons performing portions of the Work.

4.1.7 The Engineer and Board will review and approve or take other appropriate action upon the Contractor's submittals such as Shop Drawings, Product Data and Samples, but only for the limited purpose of checking for conformance with information given and the design concept expressed in the Contract Documents. The Board's or Engineer's actions will be taken with such reasonable promptness as to cause no delay in the Work or in the activities of the Board, Contractor, or separate contractors, while allowing sufficient time in the Board's or the Engineer's professional judgment to permit adequate review. Review of such submittals is not conducted for the purpose of determining the accuracy and completeness of other details such as dimensions and quantities, or for the substantiating instructions for installation or performance of equipment or systems, all of which remain the responsibility of the Contractor as required by the Contract Documents. The Engineer's or the Board's review of the Contractor's submittals shall not relieve the Contractor of the obligations under Paragraphs 3.2, 3.4 and 3.11. The Engineer's or Board's review shall not constitute approval of safety precautions or, unless otherwise specifically stated by the Engineer or Board, of any construction means, methods, techniques, sequences or procedures. The Engineer's or Board's approval of a specific item shall not indicate approval of an assembly of which the item is a component.

4.1.8 The Engineer will prepare the documentation or bulletins from which the Board will prepare Change Orders and Construction Change Directives, and the Engineer may authorize minor changes in the Work as provided in Paragraph 7.4.

4.1.9 The Engineer will conduct inspections to determine the date or dates of Substantial Completion and the date of final completion, will receive and forward to the Board for the Board's review and records all written warranties and related documents required by the Contract and assembled by the Contractor, and an opinion from which the Board will issue a final Certificate for Payment upon compliance with the requirements of the Contract Documents.

4.1.10 If the Board and Engineer agree, the Engineer will provide one (1) or more project representatives to assist in carrying out the Engineer's responsibilities at the site. The duties, responsibilities and limitations of authority of such project representatives, if any, shall be as set forth in the Contract Documents.

4.1.11 The Engineer will be asked to interpret and decide matters concerning performance under, and requirements of, the Contract Documents on written request of either the Board or Contractor. The Engineer's response to such requests will be made with reasonable promptness and within any time limits agreed upon. If no agreement is made concerning the time within which interpretations required of the Engineer shall be furnished in compliance with this Paragraph 4.1, then delay shall

not be recognized on account of failure by the Engineer to furnish such interpretations until fifteen (15) calendar days after written request is made for them. The Engineer's interpretation may be appealed to the Office of the Prosecuting Attorney for Montgomery County, Ohio, referred to herein as the Prosecutor, as the Board's agent, within seven (7) days of receipt of the Engineer's written decision. The decision of the Prosecutor shall be rendered with reasonable promptness and within any time limits agreed upon. If no agreement is made concerning the time within which interpretations required of the Prosecutor shall be furnished in compliance with this Paragraph 4.1, delay shall not be recognized on account of failure by the Prosecutor to furnish such interpretations until thirty (30) calendar days after written request is made for them.

4.1.12 Consideration of any claims, disputes or controversies pursuant to this Article does not preclude consideration of questions of law in connection with decisions provided for herein. Nothing in this Contract, however, shall be construed as making final as to questions of law the decisions of the Board or Engineer or their employees, agents, representatives, successors or assigns.

4.1.13 Interpretations and decisions of the Engineer will be consistent with the intent of, and reasonably inferable from, the Contract Documents and will be in writing or in the form of drawings. When making such interpretations and decisions, the Engineer will endeavor to secure faithful performance by both Board and Contractor, will not show partiality to either and will not be liable for results of interpretations or decisions so rendered in good faith.

4.1.14 Any reference in the Contract Documents to the Engineer taking action within a "reasonable time" is understood to mean no more than two (2) weeks.

4.2 Claims and Disputes

4.2.1 Definition. A Claim is a demand or assertion by one of the parties seeking, as a matter of right, adjustment or interpretation of Contract terms, payment of money, extension of time or other relief with respect to the terms of the Contract. The term "Claim" also includes other disputes and matters in question between the Board and Contractor arising out of or relating to the Contract. Claims must be made by written notice. The responsibility to substantiate Claims shall rest with the party making the Claim.

4.2.2 Decision of Engineer. Claims by the Contractor, including those alleging an error or omission by the Engineer, shall be referred initially to the Engineer for action as provided in Paragraph 4.3 with a copy contemporaneously to be supplied to the Board. Claims by the Board may be referred initially to the Engineer for action as provided in Paragraph 4.3 at its discretion. Claims of the Contractor first recognized after the date of final payment shall be referred to the Board. A decision by the Engineer, as provided in Subparagraph 4.3.4, shall be required as a condition precedent to litigation of a claim brought by the Contractor as to all such matters arising prior to the date final payment is due, regardless of (1) whether such matters relate to execution and progress of the Work or (2) the extent to which the Work has been completed. The decision by the Engineer in response to a Claim shall not be a condition precedent to litigation in the event (1) the position of Engineer is vacant, (2) the Engineer has not received evidence or has failed to render a decision within agreed time limits, (3) the Engineer has failed to take action required under Subparagraph 4.3.4 within thirty (30) calendar days after the Claim is made, (4) forty-five (45)

calendar days have passed after the Claim has been referred to the Engineer, (5) the Claim relates to a mechanic's lien, (6) the Claim is brought by the Board, or (7) the Board is the Engineer.

4.2.3 Time Limits on Claims. Claims by the Contractor must be made within twenty-one (21) days after occurrence of the event giving rise to such Claim or within twenty-one (21) days after the claimant first recognizes the condition giving rise to the Claim, whichever is later; provided, however, that the Contractor shall use its best efforts to furnish the Engineer and the Board, as expeditiously as possible, with notice of any Claim including, without limitation, those in connection with concealed or unknown conditions, once such Claim is recognized, and shall cooperate with the Engineer and Board in any effort to mitigate the alleged or potential damages, delay or other adverse consequences arising out of the condition which is the cause of such Claim. Claims by the Board must be made within the applicable statute of limitations period. Claims must be made by written notice. An additional Claim by the Contractor made after the initial Claim has been implemented by Change Order will not be considered unless submitted in a timely manner. Claims may also be reserved in writing within the time limits set forth in this Paragraph 4.2.3. If a Claim is reserved, the Resolution of Claims and Disputes procedure described in Paragraph 4.3 shall not commence until a written notice from the Contractor is received by the Engineer and Board. Any notice of Claim or reservation of Claim must clearly identify the alleged cause and the nature of the Claim and include data and information then available to the Contractor that will facilitate prompt verification and evaluation of the Claim.

4.2.4 Pending final resolution of a Claim, unless otherwise agreed in writing, the Contractor shall proceed diligently with performance of the Contract and the Board shall continue to make payments in accordance with the Contract Documents.

4.2.5 Waiver of Claims: Final Payment. The making and acceptance of the Final Payment shall constitute:

4.2.5.1 a waiver of all claims by the Board against the Contractor other than those arising from unsettled liens, from faulty or defective Work, or from failure to comply with the requirements of the Contract Documents or the terms of any special guarantees therein; and

4.2.5.2 a waiver of all claims by the Contractor against the Board other than those previously made in writing and still unsettled.

4.2.6 The Contractor and the Board shall not be obliged to resolve any Claim or dispute by arbitration.

4.2.7 Unknown Conditions.

4.2.7.1 If conditions are encountered at the site which are (1) subsurface or otherwise concealed physical conditions which differ materially from those indicated in the Contract Documents or (2) unknown physical conditions of an unusual nature, which differ materially from those ordinarily found to exist and generally recognized as inherent in construction activities of the character provided for in the Contract Documents, then notice by the observing party

shall be given to the other party promptly before conditions are disturbed and in no event later than fourteen (14) days after first observance of the conditions. The Engineer will promptly investigate such conditions and, if they differ materially and cause an increase or decrease in the Contractor's cost of, or time required for, performance of any part of the Work, will recommend an equitable adjustment in the Contract Sum or Contract Time, or both. If the Engineer determines that the conditions at the site are not materially different from those indicated in the Contract Documents and that no change in the terms of the Contract is justified, the Engineer shall so notify the Board and Contractor in writing, stating the reasons. Claims by either party in opposition to such determination must be made within fourteen (14) days after the Engineer has given notice of the recommendation. If the Board and Contractor cannot agree on an adjustment in the Contract Sum or Contract Time, the adjustment shall be referred to the Engineer for initial determination, subject to further proceedings pursuant to Paragraph 4.3.

- 4.2.7.2 No adjustment in the Contract Time or Contract Sum shall be permitted, however, in connection with a concealed or unknown condition which does not differ materially from those conditions disclosed or which reasonably should have been disclosed by (1) the Contractor's prior inspections, tests, reviews and preconstruction services for the Project, or (2) inspections, tests, reviews and preconstruction services which were furnished to Contractor by the Board or which Contractor had the opportunity to make or should have performed in connection with the Project.

4.2.8 Claims for Additional Cost If the Contractor wishes to make Claim for an increase in the Contract Sum, written notice as provided herein shall be given before proceeding to execute the Work. Prior notice is not required for Claims relating to an emergency endangering life or property arising under Paragraph 10.3. If the Contractor believes additional cost is involved for reasons including but not limited to (1) a written interpretation from the Engineer, (2) an order by the Board to stop the Work where the Contractor was not at fault, (3) a written order for a minor change in the Work issued by the Engineer, (4) failure of payment by the Board, (6) Board's suspension or (7) other reasonable grounds, Claim shall be filed in accordance with the Procedure established herein.

4.2.9 Claims for Additional Time

- 4.2.9.1 If the Contractor wishes to make Claim for an increase in the Contract Time, written notice as provided herein shall be given. The Contractor's Claim shall include an estimate of cost and of probable effect of delay on progress of the Work. In the case of a continuing delay only one (1) Claim is necessary.
- 4.2.9.2 Neither increases in the Contract Time nor increases in Contract Sum will be granted for delays caused by unfavorable weather, weather significantly deviating from historical averages, unsuitable or unknown ground or soil conditions, acts of god, strikes, inadequate construction forces, or the failure of the Contractor to place orders for equipment or materials sufficiently in

advance to insure delivery when needed. Claims for additional time may be made due to calamitous events of catastrophic proportions, including weather related calamitous events of catastrophic proportions.

4.2.10 Injury or Damage to Person or Property. If either party to the Contract suffers injury or damage to person or property because of an act or omission of the other party, of any of the other party's employees or agents, or of others for whose acts such party is legally liable, written notice of such injury or damage, whether or not insured, shall be given to the other party within a reasonable time not exceeding twenty-one (21) days after first observance. The notice shall provide sufficient detail to enable the other party to investigate the matter. If a Claim for additional cost or time related to this Claim is to be asserted, it shall be filed as provided in Subparagraphs 4.2.8 or 4.2.9.

4.3 Resolution of Claims and Disputes

4.3.1 The Engineer will review Claims submitted to it and take one or more of the following preliminary actions within ten (10) days of receipt of a Claim: (1) request additional supporting data from the claimant, (2) enter into an agreement with both parties as to a schedule indicating when the Engineer expects to take action, (3) reject the Claim in whole or in part, stating reasons for rejection in writing, (4) recommend approval of the Claim by the other party or (5) suggest a compromise. The Engineer may also, but is not obligated to, notify the surety, if any, of the nature and amount of the Claim.

4.3.2 If a Claim has been resolved, the Engineer will prepare or obtain appropriate documentation for submission to the Board for approval. Modifications are to be drafted as provided in Subparagraph 4.1.8.

4.3.3 If a Claim has not been resolved, the party making the Claim shall, within ten (10) days after the Engineer's preliminary response, take one or more of the following actions: (1) submit additional supporting data requested by the Engineer, (2) modify the initial Claim or (3) notify the Engineer and the other party in writing that the initial Claim still stands.

4.3.4 If a Claim has not been resolved after consideration of the foregoing and of further evidence presented to the parties or requested by the Engineer, the Engineer will notify the parties in writing that the Engineer's decision will be made within seven (7) days. Upon expiration of such time period, the Engineer will render to the parties the Engineer's written decision relative to the Claim, including any recommended change in the Contract Sum or Contract Time or both. The decision of the Engineer shall only become final and binding on the parties upon written approval of the Board by Resolution. The Board may unilaterally reject the Engineer's decision without cause. If there is a surety and there appears to be a possibility of a Contractor's default, the Engineer or the Board may, but are not obliged to notify the surety and request the surety's assistance in resolving the controversy.

4.4 Claims or Controversies Between Contractors and Subcontractors

4.4.1 Procedure. Any controversy or claim between the Contractor and a Subcontractor or Sub-subcontractor arising out of or related to this Contract, or the breach thereof, shall be first submitted to the Engineer for determination pursuant to the procedures found in Subparagraphs 4.3.1 and 4.3.3

for treatment of Claims. If the claim or controversy has not been resolved after consideration of the foregoing and of further evidence presented to the parties or requested by the Engineer, the Engineer will notify the parties in writing that the Engineer's decision will be made within seven (7) days. Upon expiration of such time period, the Engineer will render to the parties the Engineer's written decision relative to the Claim. The Engineer will promptly supply the Board with a copy of its decision. Absent an agreement between the parties to the contrary, the Engineer's decision is not binding upon the parties to the claim or controversy.

4.4.2 Contract Performance During Claim or Controversy Review. During the claim or controversy review procedure provided for above, the Contractor, Subcontractor and Sub-subcontractor shall comply with Subparagraph 4.2.4 as to Claims.

4.4.3 Limitation on Consolidation or Joinder in Arbitration. No arbitration arising out of or relating to the Contract Documents shall include, by consolidation, joinder, third party pleadings or in any other manner, the Board or the Engineer or either of their employees, agents, executors, administrators, successors, assigns or consultants, except by written consent containing specific reference to the Agreement and signed by the Engineer, Contractor, Board and any other person or entity sought to be joined and approved by the Board by Resolution if the Board is sought to be joined. No arbitration consented to by the Board shall include, by consolidation or joinder or in any other manner, parties other than the Contractor, Sub-contractor, the Board, the Engineer, a separate contractor as described in Article 6 and other persons substantially involved in a common question of fact or law whose presence is required if complete relief is to be accorded in arbitration. No person or entity other than the Contractor, Sub-contractor, the Board, the Engineer, or a separate contractor as described in Article 6 shall be included as an original third party or additional third party to an arbitration consented to by the Board whose interest or responsibility is insubstantial. Consent to arbitration involving an additional person or entity shall not constitute consent to arbitration of a dispute not described therein or with a person or entity not named or described therein.

ARTICLE 5 - SUBCONTRACTORS

5.1 Definitions

5.1.1 A Subcontractor is a person or entity who has a direct contract with the Contractor to perform a portion of the Work at the site. The term "Subcontractor" is referred to throughout the Contract Documents as if singular in number and means a Subcontractor or an authorized representative of the Subcontractor. The term "Subcontractor" does not include a separate contractor or subcontractors of a separate contractor.

5.1.2 A Sub-subcontractor is a person or entity who has a direct or indirect contract with a Subcontractor to perform a portion of the Work at the site. The term "Sub-subcontractor" is referred to throughout the Contract Documents as if singular in number and means a Sub-subcontractor or an authorized representative of the Sub-subcontractor.

5.1.3 Any specific requirement in the Contract Documents that the responsibilities or obligations of the Contractor also apply to a Subcontractor or Sub-subcontractor or both is added for emphasis and are also hereby deemed to include a Subcontractor or Sub-subcontractor of any tier. The omission of reference to a Subcontractor or Sub-subcontractor or either shall not be construed to

diminish, abrogate or limit any responsibilities or obligations of a Subcontractor of any tier under the Contract Documents or the applicable subcontract.

5.2 Award of Subcontracts and other Contracts for Portions of the Work

5.2.1 Unless otherwise stated in the Contract Documents or the bidding requirements, the Contractor, within ten (10) days after award of the Contract, shall furnish in writing to the Board through the Engineer the names of persons or entities (including those who are to furnish materials or equipment fabricated to a special design) proposed for each principal portion of the Work. The Engineer will promptly reply to the Contractor in writing stating whether or not the Board or the Engineer, after due investigation, has any objection to any such proposed person or entity.

5.2.2 The Contractor shall not contract with a proposed person or entity to whom the Board or Engineer has made an objection, and another subcontractor shall be proposed by the Contractor. Unless otherwise provided in the Contract Documents, the Contractor shall not be required to contract with anyone to whom the Contractor has made reasonable objection supported by evidence of sufficient grounds.

5.2.3 If the Board or Engineer has an objection to a person or entity proposed by the Contractor pursuant to Paragraph 5.2.2, the Contractor shall propose another to whom the Board or Engineer has no objection. The Contract Sum shall be increased or decreased by the difference in cost occasioned by such change and an appropriate Change Order shall be issued. However, no increase in the Contract Sum shall be allowed for such change unless the Contractor has acted promptly and responsively in submitting names as required and the Board approves such increase by Resolution.

5.2.4 The Contractor shall not change a Subcontractor, person or entity previously selected if the Board or Engineer makes an objection to such change.

5.3 Sub-contractual Relations

5.3.1 By appropriate agreement, written where legally required for validity, the Contractor shall require each Subcontractor, to the extent of the Work to be performed by the Subcontractor, to be bound to the Contractor by terms of the Contract Documents, and to assume toward the Contractor all the obligations and responsibilities which the Contractor, by these Documents, assumes toward the Board and Engineer. Each subcontract agreement shall preserve and protect the rights of the Board and Engineer under the Contract Documents with respect to the Work to be performed by the Subcontractor so that subcontracting thereof will not prejudice such rights, and shall allow to the Subcontractor, unless specifically provided otherwise in the subcontract agreement, the benefit of all rights, remedies and redress against the Contractor that the Contractor, by the Contract Documents, has against the Board. Where appropriate, the Contractor shall require each Subcontractor to enter into similar agreements with Sub-subcontractors. The Contractor shall make available to each proposed Subcontractor, prior to the execution of the subcontract agreement, copies of the Contract Documents to which the Subcontractor will be bound, and, upon written request of the Subcontractor, identify to the Subcontractor terms and conditions of the proposed subcontract agreement which may be at variance with the Contract Documents. Subcontractors shall similarly make copies of applicable portions of such documents available to their respective proposed Sub-subcontractors.

5.4 Contingent Assignment of Subcontracts

5.4.1 Each subcontract agreement for a portion of the Work is assigned by the Contractor to the Board provided that:

5.4.1.1 assignment is effective only after termination of the Contract by the Board for cause pursuant to Paragraph 14.2 and only for those subcontract agreements which the Board accepts by notifying the Subcontractor in writing; and

5.4.1.2 assignment is subject to the prior rights of the surety, if any, obligated under bond relating to the Contract.

5.4.2 If the Work in connection with a subcontract has been suspended for more than thirty (30) days after termination of the Contract by the Board pursuant to Paragraph 14.2 and the Board accepts assignment of such subcontracts, the Subcontractor's compensation shall be equitably adjusted for any increase in direct costs incurred by such Subcontractor as a result of the suspension.

5.4.3 Each subcontract shall specifically provide that the Board shall only be responsible to the Subcontractor for those obligations of the Contractor that accrue subsequent to the Board's exercise of any rights under this conditional assignment.

ARTICLE 6 - CONSTRUCTION BY BOARD OR BY SEPARATE CONTRACTORS

6.1 Board's Right to Perform Construction and to Award Separate Contracts

6.1.1 The Board reserves the right to perform construction or operations related to the Project with the Board's own forces, and to award separate contracts in connection with other portions of the Project or other construction or operations on the site under Conditions of the Contract identical or substantially similar to these including those portions related to insurance and waiver of subrogation. If the Contractor claims that delay or additional cost is involved because of such action by the Board, the Contractor shall make such Claim as provided elsewhere in the Contract Documents.

6.1.2 When separate contracts are awarded for different portions or trades of the Project or other construction or operations on the site, the term "Contractor" in the Contract Documents in each case shall mean the Contractor who executes each separate Board-Contractor Agreement.

6.1.3 The Coordinating Contractor shall provide for coordination of the activities of the Board's own forces and of each separate contractor with the Work of the Contractor, who shall cooperate with them. The Contractor shall participate with other separate contractors and the Board in reviewing their construction schedules when directed to do so. The Contractor shall make any revisions to the construction schedule and Contract Sum as deemed necessary after a joint review and mutual agreement. The construction schedules shall then constitute the schedules to be used by the Contractor, separate contractors and the Board until subsequently revised.

6.1.4 Unless otherwise provided in the Contract Documents, when the Board performs construction or operations related to the Project with the Board's own forces, the Board shall be deemed to be subject to the same obligations and to have the same rights which apply to the

Contractor under the Conditions of the Contract, including, without excluding others, those stated in Article 3, this Article 6 and Articles 10, 11 and 12.

6.1.5 The Contractor accepts assignment of, and liability for, all purchase orders and other agreements for procurement of materials and equipment that are identified as part of the Contract Documents for the Work. The Contractor shall be responsible for such pre-purchased items, if any, as if the Contractor were the original purchaser. The Contract Sum includes, without limitation, all costs and expenses in connection with delivery, storage, insurance, installation and testing of items covered in any assigned purchase orders or agreements. All warranty and correction of the Work obligation under the Contract Documents shall also apply to any pre-purchased items, unless the Contract Documents specifically provide otherwise. The Contractor shall not be liable under this Subparagraph 6.1.5 if the Engineer and the Board determine that such materials and equipment cannot be incorporated into the Work and such items must be replaced. Additionally, the Contractor shall not be liable for such material and equipment if the vendor of same becomes financially unable to perform under any pre-existing agreement for procurement.

6.2 Mutual Responsibility

6.2.1 The Contractor shall afford the Board and separate contractors reasonable opportunity for introduction and storage of their materials and equipment and performance of their activities and shall connect and coordinate the Contractor's construction and operations with theirs as required by the Contract Documents.

6.2.2 If part of the Contractor's Work depends for proper execution or results upon construction or operations by the Board or a separate contractor, the Contractor shall, prior to proceeding with that portion of the Work, promptly report to the Engineer and Board apparent discrepancies or defects in such other construction that would render it unsuitable for such proper execution and results. Failure of the Contractor to so report shall constitute an acknowledgment that the Board's or separate contractors' completed or partially completed construction is fit and proper to receive the Contractor's Work, except as to defects not then reasonably discoverable.

6.2.3 Costs caused by improperly timed activities or defective construction shall be borne by the party responsible therefor.

6.2.4 The Contractor shall promptly remedy damage wrongfully caused by the Contractor to completed or partially completed construction or to property of the Board or separate contractors as provided in Subparagraph 10.2.5.

6.2.5 Claims and other disputes and matters in question between the Contractor and a separate contractor shall be subject to the provisions of Paragraph 4.2 provided the separate contractor has reciprocal obligations.

6.2.6 The each separate contractor shall have the same responsibilities for cutting and patching as are described for the Contractor in Paragraph 3.13.

6.3 Board's Right to Clean Up

6.3.1 If a dispute arises among the Contractor, separate contractors, subcontractors and the Board as to the responsibility under their respective contracts for maintaining the premises and surrounding area free from waste materials and rubbish as described in Paragraph 3.14, the Board may clean up and allocate the cost among those it deems responsible.

ARTICLE 7 - CHANGES IN THE WORK

7.1 Changes

7.1.1 Changes in the Work may be accomplished after execution of the Contract, and without invalidating the Contract, by Change Order, Construction Change Directive or order for a minor change in the Work, subject to the limitations stated in this Article 7 and elsewhere in the Contract Documents.

7.1.2 A Change Order shall be based upon agreement among the Board by Resolution, the Contractor and the Engineer; a Construction Change Directive requires agreement by the Board by Resolution and the Engineer and may or may not be agreed to by the Contractor; an order for a minor change in the Work may be issued by the Engineer alone.

7.1.3 Except as permitted in Paragraph 7.3, a change in the Contract Sum or the Contract Time shall be accomplished only by Change Order. Except as provided in Subparagraph 7.1.4, neither 1) any course of conduct or dealings between the parties, nor 2) any order, statement or conduct of the Board, Engineer, or their employees or agents, nor 3) any express or implied acceptance of alterations or additions to the Work, nor 4) any claim that the Board has been unjustly enriched by any alteration or addition to the Work, whether or not there is, in fact, any unjust enrichment to the Work, shall be treated as a Change Order nor shall it be the basis of any claim for an increase in any amounts due under the Contract Documents or a change in any time period provided for in the Contract Documents nor shall it be the basis for an equitable adjustment.

7.1.4 Any oral or written order (including any direction, instruction, interpretation or determination) by the Board or Engineer or their agent that causes a change shall be treated as a Change Order only where the Contractor gives the Board written notice stating (1) the date of the order, (2) the circumstances surrounding the order, (3) the source of the order, and (4) that the Contractor regards the order as a Change Order.

7.1.5 Should any change to the Contract Time or Contract Sum be included or necessitated by the Change Order created pursuant to Subparagraph 7.1.4, within fourteen (14) calendar days of the giving the notice required under Subparagraph 7.1.4, the Contractor shall provide the Board with a "Proposal for adjustment" (hereinafter referred to as the "Proposal") based upon an equitable adjustment to the Contract Sum or Contract Time. Guided by the Proposal, the Board shall make an equitable adjustment to the Contract Time or Contract Sum by way of a Change Order made pursuant to Subparagraph 7.2.1 which, if not signed by the Contractor, shall be treated as a Construction Change Directive.

7.1.6 No Change Order under Subparagraph 7.1.4 shall be allowed for any cost incurred more than twenty (20) days before the Contractor gives written notice as required. No Proposal shall be allowed if asserted after final payment under the Agreement.

7.1.7 If unit prices are stated in the Contract Documents or subsequently agreed upon, and if quantities originally contemplated are so changed in a proposed Change Order or Construction Change Directive that application of such unit prices to quantities of Work proposed will cause substantial inequity to the Board or Contractor, the applicable unit prices shall be equitably adjusted.

7.1.8 Contract Sum Change Limits. In no event shall a change in the Contract Sum include a charge for Contractor's overhead and profit in excess of fifteen percent (15%) over the Contractor's actual cost.

7.1.9 Limited Authority of Board's Representatives. No employee, agent, or representative of the Board or the Engineer has the authority to approve any change in the Contract Sum, either orally or in writing. The Contractor shall not rely upon any representation by any employee, agent or representative of the Board concerning changes in the Contract Sum.

7.2 Change Orders

7.2.1 A Change Order is a written instrument prepared by the Engineer or the Board and signed and by the Board, Contractor and Engineer, and approved by a Resolution of the Board, stating their agreement upon all of the following:

- 7.2.1.1 a change in the Work;
- 7.2.1.2 the amount of the adjustment in the Contract Sum, if any; and
- 7.2.1.3 the extent of the adjustment in the Contract Time, if any.

7.2.2 Methods used in determining adjustments to the Contract Sum may include those listed in Subparagraph 7.3.3.

7.3 Construction Change Directives

7.3.1 A Construction Change Directive is a written order prepared by the Engineer or the Board and signed by the Board and Engineer, and approved by a Resolution of the Board, directing a change in the Work and stating a proposed basis for adjustment, if any, in the Contract Sum or Contract Time, or both. The Board may by Construction Change Directive, without invalidating the Contract, order changes in the Work within the general scope of the Contract consisting of additions, deletions or other revisions, the Contract Sum and Contract Time being adjusted accordingly.

7.3.2 A Construction Change Directive shall be used in the absence of total agreement on the terms of a Change Order.

7.3.3 If the Construction Change Directive provides for an adjustment to the Contract Sum, the adjustment shall be based on one (1) of the following methods:

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- 7.3.3.1 mutual acceptance of a lump sum properly itemized and supported by sufficient substantiating data to permit evaluation;
- 7.3.3.2 unit prices stated in the Contract Documents or subsequently agreed upon;
- 7.3.3.3 cost to be determined in a manner agreed upon by the parties and a mutually acceptable fixed or percentage fee; or
- 7.3.3.4 as provided in Subparagraph 7.3.6.

7.3.4 Upon receipt of a Construction Change Directive, the Contractor shall promptly proceed with the change in the Work involved and advise the Engineer and Board of the Contractor's agreement or disagreement with the method, if any, provided in the Construction Change Directive for determining the proposed adjustment in the Contract Sum or Contract Time.

7.3.5 A Construction Change Directive signed by the Contractor indicates the agreement of the Contractor therewith, including adjustment in Contract Sum and Contract Time or the method for determining them. Such agreement shall be effective immediately and shall be recorded as a Change Order.

7.3.6 If the Contractor does not respond promptly or disagrees with the method for adjustment in the Contract Sum, the method and the adjustment shall be determined by the Engineer on the basis of reasonable expenditures and savings of those performing the Work attributable to the change, including, in case of an increase in the Contract Sum, a reasonable allowance for overhead and profit. Such determination is subject to Board approval. In such case, and also under Clause 7.3.3.3, the Contractor shall keep and present, in such form as the Engineer or Board may prescribe, an itemized accounting together with appropriate supporting data. Unless otherwise provided in the Contract Documents, costs for the purposes of this Subparagraph 7.3.6 shall be limited to the following:

- 7.3.6.1 costs of labor, including social security, old age and unemployment insurance, fringe benefits required by agreement or custom, and workers' compensation insurance;
- 7.3.6.2 costs of materials, supplies and equipment, including reasonable cost of transportation, whether incorporated or consumed;
- 7.3.6.3 reasonable rental costs of machinery and equipment, exclusive of hand tools, whether rented from the Contractor or others;
- 7.3.6.4 costs of premiums for all bonds and insurance, permit fees, and sales, use or similar taxes related to the Work; and
- 7.3.6.5 additional costs of supervision and field office personnel directly attributable to the change.

7.3.7 Pending final determination of cost to the Board, amounts not in dispute may be included in Applications for Payment. The amount of credit to be allowed by the Contractor to the Board for

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a deletion or change which results in a net decrease in the Contract Sum shall be actual net cost as confirmed by the Board and the Engineer. When both additions and credits covering related Work or substitutions are involved in a change, the allowance for overhead and profit shall be figured on the basis of net increase, if any, with respect to that change.

7.3.8 If the Board and Contractor do not agree with the adjustment in Contract Time or the method for determining it, the adjustment or the method shall be referred to the Engineer for his opinion, which shall be binding on the parties only if agreed to by the Board and approved by a Board Resolution.

7.3.9 When the Board and Contractor agree with the determination made by the Engineer concerning the adjustments in the Contract Sum and Contract Time, or otherwise reach agreement upon the adjustments, such agreement shall be effective immediately upon passage of a proper Resolution of the Board and shall be recorded by preparation and execution of an appropriate Change Order.

7.4 Minor Changes in the Work

7.4.1 The Engineer, or the Board through the Engineer, will have authority to order minor changes in the Work not involving adjustment in the Contract Sum or extension of the Contract Time and not inconsistent with the intent of the Contract Documents. Such changes shall be effected by written order and shall be binding on the Contractor. The Engineer shall notify the Board of such changes before notice is given to the Contractor and the Board may exercise the right to veto any such minor changes at any time. The Contractor shall carry out such written orders promptly unless otherwise informed by the Board or Engineer.

7.4.2 If the Contractor does not agree with the Board or Engineer's decision that a minor change in the work issued pursuant to Subparagraph 7.4.1 does not involve adjustment in the Contract Sum or extension of the Contract Time, the Contractor shall serve written notice of its disagreement upon the Board and Engineer within thirty (30) days of receipt of the written request for a minor change in the work and, if the parties do not resolve the matter within thirty (30) days after the Board receives such notice of disagreement, the Contractor may file a Claim pursuant to Paragraph 4.2 asserting such disagreement. For Claims brought under Paragraph 4.2 pursuant to this Subparagraph 7.4.2, the date of occurrence of the event giving rise to the Claim for purposes of Subparagraph 4.2.3 shall be thirty (30) days after the Board receives the notice of disagreement.

7.4.3 Pending final resolution of a Claim or disagreement under this Paragraph 7.4, unless otherwise agreed in writing, the Contractor shall proceed diligently with performance of the Contract and the Board shall continue to make payments in accordance with the Contract Documents.

ARTICLE 8 - TIME

8.1 Definitions

8.1.1 Unless otherwise provided, Contract Time is the period of time, including authorized adjustments, allotted in the Contract Documents for Substantial Completion of the Work.

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8.1.2 The date of commencement of the Work is the date from which the Contract Time in Subparagraph 8.1.1 is measured and shall be the date of the Agreement, unless a different date is agreed upon in writing or provision is made for the date to be fixed in a notice to proceed issued by the Board. The date shall not be postponed by the failure to act of the Contractor or of persons or entities for whom the Contractor is responsible.

8.1.3 The date of Substantial Completion is the date certified by the Board and the Engineer in accordance with Paragraph 9.7.

8.1.4 The term "day" as used in the Contract Documents shall mean calendar day unless otherwise specifically defined.

8.1.5 Unless the date of commencement is established by a notice to proceed issued by the Board, the Contractor shall notify the Board in writing not less than five (5) days before commencing the Work to permit the timely filing of mortgages, mechanic's liens and other security interests.

8.1.6 The Board and Contractor may agree to increase the Contract Time, at any time and for any reason, by a properly approved and executed Change Order. Unless otherwise specifically provided in that Change Order pursuant to the terms of the Contract Documents, such an increase in the Contract Time shall not imply any kind of corresponding increase in the Contract Sum.

8.2 Progress and Completion

8.2.1 Time limits stated in the Contract Documents are of the essence of the Contract. By executing the Agreement the Contractor confirms that the Contract Time is a reasonable period for performing the Work.

8.2.2 The Contractor shall not knowingly, except by agreement or instruction of the Board in writing, prematurely commence operations on the site or elsewhere prior to the effective date of insurance required by Article 11 to be furnished by the Contractor. The date of commencement of the Work shall not be changed by the effective date of such insurance. Unless the date of commencement is established by a notice to proceed given by the Board, the Contractor shall notify the Board in writing not less than five (5) days or other agreed period before commencing the Work to permit the timely filing of mortgages, mechanic's liens and other security interests.

8.2.3 The Contractor shall proceed expeditiously with adequate forces and shall achieve Substantial Completion within the Contract Time.

8.3 Delays and Extensions of Time

8.3.1 Except as otherwise provided in the Contract Documents, if the Contractor is delayed at any time in progress of the Work by an act or neglect of the Board or Engineer, or of an employee of either, or of a separate contractor employed by the Board, or by changes ordered in the Work, or by labor disputes, fire, unusual delay in deliveries, unavoidable casualties or other cause beyond the Contractor's control, or by delay authorized by the Board pending arbitration, or by other causes which the Engineer or Board determines may justify delay, then the Contract Time shall be extended by Change Order for such reasonable time as the Engineer and Board may determine to the extent such delay will prevent the Contractor from achieving Substantial Completion within the Contract

Time and if the performance of the Work is not, was not or would not have been delayed by any other cause for which the Contractor is not entitled to an extension in the Contract Time under the Contract Documents. The Contractor further acknowledges and agrees that adjustments in the Contract Time will be permitted for a delay only to the extent such delay (1) is not caused, or could not have been anticipated, by the Contractor, (2) could not be limited or avoided by the Contractor's timely notice to the Board of the delay and (3) is of a duration of not less than one (1) day. In the event the Engineer and Board cannot agree upon a reasonable time, the decision of the Board shall control.

8.3.2 Claims relating to time shall be made in accordance with applicable provisions of Paragraph 4.2.

8.3.3 Notwithstanding anything to the contrary in the Contract Documents, extensions of the Contract Time, to the extent permitted under Paragraph 8.3.1, shall be the sole remedy of the Contractor for any (1) delay in the commencement, prosecution or completion of the Work, (2) hindrance or obstruction in the performance of the Work, (3) loss of productivity, or (4) similar claims (collectively referred to in this Paragraph 8.3.3 as Delays) whether or not such Delays are foreseeable. In no event shall the Contractor be entitled to any compensation or recovery of any damage, in connection with any Delay, including, without limitation, consequential damages, lost opportunity costs, interest or similar claims.

ARTICLE 9 - PAYMENTS AND COMPLETION

9.1 Schedule of Values

9.1.1 Schedule of Values. Within ten (10) days after execution of the Agreement, the Contractor shall submit to the Engineer a schedule of values allocated to various portions of the Work, prepared in such form and supported by such data to substantiate its accuracy as the Engineer or Board may require. This schedule, unless objected to by the Engineer, shall be used as a basis for reviewing the Contractor's Applications for Payment.

9.1.2 Material Sources and Substitutions. Within ten (10) days after execution of the Agreement, the Contractor shall furnish the Board with a list of materials and suppliers upon which the Contractor's bid was based. Whenever a substitution of materials is proposed on an "approved equal" basis, Contractor shall submit such substitutions for approval by the Board.

9.2 Applications for Payment

9.2.1 At least ten (10) days before the last day of each calendar month, unless otherwise required by the Contract Documents, the Contractor shall submit to the Board an itemized Application for Payment for operations completed in accordance with the schedule of values. Such application shall be notarized and supported by such data substantiating the Contractor's right to payment as the Board or Engineer may require, such as, but not limited to, copies of requisitions from Subcontractors and material suppliers, and reflecting retainage if provided for elsewhere in the Contract Documents or as required by law. A copy of the Application for Payment shall be submitted to the Engineer contemporaneously with submission of the original Application for Payment to the Board.

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9.2.1.1 Applications for payment on account of changes in the Work which have been properly authorized by Construction Change Directives or Change Orders approved by Board Resolution must be made separately from applications for payment under separate Board Resolutions.

9.2.1.2 Such applications may not include requests for payment of amounts the Contractor does not intend to pay to a Subcontractor or material supplier because of a dispute or other reason.

9.2.2 Unless otherwise provided in the Contract Documents, payments shall be made on account of materials and equipment delivered and suitably stored at the site of the Work for subsequent incorporation in the Work after such materials and equipment have been inspected by the Contractor, Engineer or Board and the Board agrees that such materials and equipment meet the specifications in the Contract Documents. If approved in advance by the Board, payment may similarly be made for materials and equipment suitably stored off the site at a location agreed upon in writing. Payment for materials and equipment stored on or off the site shall be conditioned upon compliance by the Contractor with procedures satisfactory to the Board to establish the Board's title to such materials and equipment or otherwise protect the Board's interest, and shall include applicable insurance, storage and transportation to the site for such materials and equipment stored off the site. Retainage from payment for such material and equipment shall be in accordance with applicable law.

9.2.3 The Contractor warrants that title to all Work covered by an Application for Payment will pass to the Board no later than the time of payment. The Contractor further warrants that upon submittal of an Application for Payment all Work for which Certificates for Payment have been previously issued and payments received from the Board shall, to the best of the Contractor's knowledge, information and belief, be free and clear of liens, claims, security interests or encumbrances in favor of the Contractor, Subcontractors, material suppliers, or other persons or entities making a claim by reason of having provided labor, materials and equipment relating to the Work.

9.2.4 Each Application for Payment shall be based on the schedule of values submitted by the Contractor in accordance with the Contract Documents and the Wage Determination. The schedule of values shall allocate the entire Contract Sum among the various portions of the Work and be prepared in such form and supported by such data to substantiate its accuracy as the Engineer or Board may require. This schedule, unless objected to by the Engineer or Board, shall be used as a basis for reviewing the Contractor's Applications for payment.

9.2.5 The period covered by each Application for Payment shall be one (1) calendar month ending on the last day of the month unless otherwise agreed to by the parties in writing.

9.3 Certificates for Payment

9.3.1 The Engineer will, within seven (7) days after receipt of the Contractor's Application for Payment, either issue to the Board a recommendation for a Certificate for Payment, with a copy to the Contractor, for such amount as the Engineer determines is properly due, or notify the Contractor and Board in writing of the Engineer's reasons for withholding such recommended certification in whole or in part as provided in Subparagraph 9.4.1. Both the recommended and the actual

Certificate of Payment will reflect retainage of a percentage of the amount due as required pursuant to Ohio Revised Code Chapter 153. The Board will, within seven (7) days after receipt of the Engineer's recommendation for a Certificate for Payment either issue to the Contractor a Certificate for Payment, for such amount as the Board determines is properly due, or notify the Contractor in writing of the Board's reasons for withholding such certification in whole or in part as provided in Subparagraph 9.4.1.

9.3.2 The issuance of a recommendation for a Certificate for Payment will constitute a representation by the Engineer to the Board, based on the Engineer's observations at the site and the data comprising the Application for Payment, that the Work has progressed to the point indicated and that, to the best of the Engineer's knowledge, information and belief, quality of the Work is in accordance with the Contract Documents. The foregoing representations are subject to an evaluation of the Work for conformance with the Contract Documents upon Substantial Completion, to results of subsequent tests and inspections, to minor deviations from the Contract Documents correctable prior to completion and to specific qualifications expressed by the Engineer. The issuance of a recommendation for a Certificate for Payment will further constitute a representation that, in the Engineer's opinion, the Contractor is entitled to payment in the amount certified. However, the issuance of a recommendation for a Certificate for Payment will not be a representation that the Engineer has (1) made continuous on-site inspections to check the quality or quantity of the Work, (2) reviewed construction means, methods, techniques, sequences or procedures beyond its control, (3) reviewed copies of requisitions received from Subcontractors and material suppliers and other data requested by the Board to substantiate the Contractor's right to payment or (4) made examination to ascertain how or for what purpose the Contractor has used money previously paid on account of the Contract Sum.

9.4 Decisions to Withhold Certification

9.4.1 The Engineer may decide not to recommend to certify payment and may withhold a recommendation for a Certificate for Payment in whole or in part, to the extent reasonably necessary to protect the Board, if in the Engineer's opinion the representations to the Board required by Subparagraph 9.3.2 cannot be made. If the Engineer is unable to recommend payment in the amount of the Application, the Engineer will notify the Contractor and Board as provided in Subparagraph 9.3.1. If the Contractor and Engineer cannot agree on a revised amount, the Engineer will promptly issue a recommendation for a Certificate for Payment for the amount for which the Engineer is able to make such representations to the Board. The Engineer or Board may also decide not to recommend or certify payment or, because of subsequently discovered evidence or subsequent observations, may nullify the whole or a part of a recommendation for a Certificate for Payment or a Certificate for Payment previously issued, to such extent as may be necessary in the Engineer's or Board's opinion to protect the Board from loss because of:

- 9.4.1.1 defective Work not remedied;
- 9.4.1.2 third party claims filed or reasonable evidence indicating probable filing of such claims;
- 9.4.1.3 failure of the Contractor to make payments properly to Subcontractors or for labor, materials or equipment;

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- 9.4.1.4 reasonable evidence that the Work cannot be completed for the unpaid balance of the Contract Sum;
- 9.4.1.5 damage to the Board or another contractor;
- 9.4.1.6 reasonable evidence that the Work will not be completed within the Contract Time, and that the unpaid balance would not be adequate to cover actual or liquidated damages for the anticipated delay;
- 9.4.1.7 persistent failure to carry out the Work in accordance with the Contract Documents; or
- 9.4.1.8 the Work has not progressed to the point indicated in the Application for Payment or the Work is not of the quality required by the Contract Documents.

9.4.2 When the above reasons for withholding a recommendation for a certification of payment or for withholding a Certificate of Payment are removed, a recommendation for a certification of payment and a Certificate of Payment will be made for amounts previously withheld.

9.5 Progress Payments

9.5.1 After the Engineer has issued a recommendation for a Certificate for Payment, the Board shall issue a Certificate for Payment in the manner and within the time provided in the Contract Documents, and shall so notify the Engineer. Such Certificate for Payment shall then be submitted by the Board to the Auditor of Montgomery County, Ohio for payment of funds due thereunder on behalf of the Board directly to the Contractor, unless otherwise requested in writing.

9.5.2 The Contractor shall promptly pay each Subcontractor, upon receipt of payment from the Board, out of the amount paid to the Contractor on account of such Subcontractor's portion of the Work, the amount to which said Subcontractor is entitled, reflecting percentages actually retained from payments to the Contractor on account of such Subcontractor's portion of the Work. The Contractor shall, by appropriate agreement with each Subcontractor, require each Subcontractor to make payments to Sub-subcontractors in similar manner. Notwithstanding anything in this Paragraph 9.5.2 to the contrary, the Board may elect, in the Board's sole discretion, to make any payment requested by the Contractor on behalf of a Subcontractor of any tier jointly payable to the Contractor and such Subcontractor. The Contractor and such Subcontractor shall be responsible for the allocation and disbursement of funds included as part of any such joint payment. In no event shall any joint payment be construed to create any (1) contract between the Board and any Subcontractor of any tier, (2) obligation from the Board to such Subcontractor, or (3) rights in such Subcontractor against the Board.

9.5.3 The Engineer will, on request, furnish to a Subcontractor, if practicable, information regarding percentages of completion or amounts applied for by the Contractor and action taken thereon by the Engineer and Board on account of portions of the Work done by such Subcontractor.

9.5.4 Neither the Board nor Engineer shall have an obligation to pay or to see to the payment of money to a Subcontractor except as may otherwise be required by law.

9.5.5 Payment to material suppliers shall be treated in a manner similar to that provided in Subparagraphs 9.5.2, 9.5.3 and 9.5.4.

9.5.6 A Certificate for Payment, a progress payment, a recommendation for a Certificate for Payment or partial or entire use or occupancy of the Project by the Board shall neither constitute acceptance of Work not in accordance with the Contract Documents nor act as a waiver of any claim.

9.5.7 Subject to the provisions of the Contract Documents and the Ohio Revised Code, the amount of each progress payment shall be computed as follows:

- 9.5.7.1 take that portion of the Contract Sum properly allocable to completed Work as determined by multiplying the percentage completion of each portion of the Work by the share of the total Contract Sum allocated to that portion of the Work in the schedule of values and Wage Determination, less retainage as provided by Ohio Revised Code Sections 153.12, 153.13, 153.14 and 153.63, as may be amended. Pending final determination of cost to the Board of changes in the Work, amounts not in dispute may be included as provide in Subparagraph 7.3.7 even though the Contract Sum has not yet been adjusted by Change Order and Board Resolution;
- 9.5.7.2 add that potion of the Contract Sum properly and legally allocable to materials and equipment delivered and suitably stored at the site for subsequent incorporation in the completed construction (or, if approved in advance by the Board, suitably stored off the site at a location agreed upon in writing), less retainage as provided by Ohio Revised Code Sections 153.12, 153.13, 153.14 and 153.63 as may be amended;
- 9.5.7.3 subtract the aggregate of previous payments made by the Board; and
- 9.5.7.4 subtract amounts, if any, for which the Engineer or Board has withheld or nullified a Certificate of Payment or a recommendation for same as provided in Paragraph 9.4.

9.5.8 The progress payment amount determined in accordance with Subparagraph 9.5.7 shall be further modified under the following circumstances:

- 9.5.8.1 subtract, upon Substantial completion of the Work, a sum as determined by the Engineer and the Board for incomplete Work and unsettled claims; and
- 9.5.8.2 add, if final completion of the Work is thereafter materially delayed through no fault of the Contractor, any additional amounts payable in accordance with Subparagraph 9.9.3.

9.5.9 Progress payments shall have no relationship to the transfer of title in the Work absent an express written agreement to the contrary signed by both the Board and Contractor and specifically

addressing the orderly transfer, limitation or discontinuation of all or part of any applicable insurance coverages.

9.6 Failure of Payment

9.6.1 If the Board does not issue a Certificate for Payment, through no fault of the Contractor, within forty-five (45) days after receipt of the Contractor's Application for Payment, or if the Board does not pay the Contractor within forty-five (45) days after the date established in the Contract Documents the amount recommended to be certified by the Engineer and actually certified by the Board, then the Contractor may, upon twenty-one (21) additional days' written notice to the Board and Engineer, stop the Work until payment of the amount owing has been received. The Contract Time shall be extended appropriately and the Contract Sum may be increased by the amount of the Contractor's reasonable costs of shut-down, delay and start-up, which shall be accomplished as provided in Article 7.

9.6.2 If the Board is entitled to reimbursement or payment from the Contractor under or pursuant to the Contract Documents, such payment shall be made promptly upon demand by the Board. Notwithstanding anything contained in the Contract Documents to the contrary, if the Contractor fails to promptly make any payment due the Board, or the Board incurs any costs and expenses to cure any default of the Contractor or to correct defective Work, the Board shall have an absolute right to offset such amount against the Contract Sum and may, in the Board's sole discretion, elect either to: (1) deduct an amount equal to that which the Board is entitled from any payment then or thereafter due the Contractor from the Board, or (2) issue a written notice to the Contractor reducing the Contract Sum by an amount equal to that which the Board is entitled to which notice the Contractor hereby agrees to be bound.

9.7 Substantial Completion

9.7.1 Substantial Completion is the stage in the progress of the Work when (a) the Work or designated portion thereof is sufficiently complete in accordance with the Contract Documents so the Board can occupy and utilize the Work for its intended purpose and (b) the Board has received all final certificates of occupancy and other final permits, approvals, licenses and other documents or authorizations from any governmental authority necessary or appropriate for final occupancy and use of the Project.

9.7.2 When the Contractor considers that the Work, or a portion thereof which the Board agrees in writing to accept separately, is substantially complete, the Contractor shall prepare and submit to the Engineer and the Board a comprehensive list of items to be completed or corrected. The Contractor shall proceed promptly to complete and correct items on the list. Failure to include an item on such list does not alter the responsibility of the Contractor to complete all Work in accordance with the Contract Documents. Upon receipt of the Contractor's list, the Engineer and the Board will jointly make an inspection to determine whether the Work or designated portion thereof is substantially complete. If the Engineer and Board's inspection discloses any item, whether or not included on the Contractor's list, which is not in accordance with the requirements of the Contract Documents, the Contractor shall, before issuance of the Certificate of Substantial Completion, complete or correct such item upon notification by the Engineer or Board. The Contractor shall then submit a request for another joint inspection by the Engineer and the Board to determine Substantial Completion. When the Work or designated portion thereof is substantially

complete, the Engineer will prepare a Certificate of Substantial Completion which shall establish the date of Substantial Completion, shall establish responsibilities of the Board and Contractor for security, maintenance, heat, utilities, damage to the Work and insurance, within the bounds of the Contract Documents, and shall fix the time within which the Contractor shall finish all items on the list accompanying the Certificate. Warranties required by the Contract Documents shall commence on the date of Substantial Completion of the Work or designated portion thereof unless otherwise provided in the Certificate of Substantial Completion. The Certificate of Substantial Completion shall be submitted to the Board and Contractor for their written acceptance of responsibilities assigned to them in such Certificate.

9.7.3 Upon Substantial Completion of the Work or designated portion thereof and upon application by the Contractor and recommendation for certification by the Engineer, the Board shall certify and make payment, reflecting adjustment in retainage, if any, for such Work or portion thereof as provided in the Contract Documents. Payment of any retainage shall be made in accordance with law.

9.8 Partial Occupancy or Use

9.8.1 The Board may occupy or use any completed or partially completed portion of the Work at any stage when such portion is designated by separate agreement with the Contractor, provided such occupancy or use is consented to by the insurer as required under Subparagraph 11.3.11 and authorized by public authorities having jurisdiction over the Work. Such partial occupancy or use may commence whether or not the portion is substantially complete, provided the Board and Contractor have accepted in writing the responsibilities assigned to each of them for payments, retainage if any, security, maintenance, heat, utilities, damage to the Work and insurance, and have agreed in writing concerning the period for correction of the Work and commencement of warranties required by the Contract Documents. When the Contractor considers a portion substantially complete, the Contractor shall prepare and submit a list to the Engineer and Board as provided under Subparagraph 9.7.2. Consent of the Contractor to partial occupancy or use shall not be unreasonably withheld. The stage of the progress of the Work shall be determined by written agreement between the Board and Contractor or, if no agreement is reached, by decision of the Engineer, subject to Board approval.

9.8.2 Immediately prior to such partial occupancy or use, the Board, Contractor and Engineer shall jointly inspect the area to be occupied or portion of the Work to be used in order to determine and record the condition of the Work.

9.8.3 Unless otherwise agreed upon in writing, partial occupancy or use of a portion or portions of the Work shall neither constitute acceptance of Work not complying with the requirements of the Contract Documents nor act as a waiver of any claim by any party.

9.9 Final Completion and Final Payment

9.9.1 Upon completion of all Work required to be performed, Contractor may serve written notice that the Work is ready for final inspection and acceptance and upon receipt of such notice and upon receipt of a final Application for Payment, the Engineer and the Board will promptly make such inspection and, when the Engineer finds the Work acceptable under the Contract Documents and the Contract fully performed, the Engineer will promptly issue a final recommendation for a

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Certificate for Payment stating that to the best of the Engineer's knowledge, information and belief, and on the basis of the Engineer's observations and inspections, the Work has been completed in accordance with terms and conditions of the Contract Documents and that the entire balance found to be due the Contractor and noted in said recommendation for said final Certificate is due and payable. The Engineer's final recommendation for a Certificate for Payment will constitute a further representation that, in the Engineer's opinion, conditions listed in Subparagraph 9.9.2 as precedent to the Contractor's being entitled to final payment have been fulfilled. Upon receipt of the Engineer's recommendation for a final Certificate for Payment and when the Board finds the Work acceptable under the Contract Documents and the Contract fully performed, the Board will promptly issue a final Certificate for Payment stating that to the best of the Board's knowledge, information and belief, and on the basis of the Engineer's and Board's recommendations, observations and inspections, the Work has been completed in accordance with terms and conditions of the Contract Documents and that the entire balance found to be due the Contractor and noted in said final Certificate is due and payable.

9.9.2 Neither final payment nor any remaining retained percentage shall become due until the Contractor submits to the Board with copies to the Engineer, (1) an original, notarized affidavit certifying that all Work required to be performed under this Contract has been fully completed in accordance with the Contract Documents and that all liens, claims, payrolls, bills for labor and materials and equipment, and other indebtedness connected with the Work for which the Board or the Board's property might be responsible or encumbered (less amounts withheld by Board) have been paid or otherwise satisfied, (2) a certificate evidencing that insurance required by the Contract Documents to remain in force after final payment is currently in effect and will not be canceled or allowed to expire until at least thirty (30) days' prior written notice has been given to the Board, (3) a written statement that the Contractor knows of no substantial reason that the insurance will not be renewable to cover the period required by the Contract Documents, (4) consent of surety, if any, to final payment, (5) if required by the Board, other data establishing payment or satisfaction of obligations, such as receipts, releases and waivers of liens, claims, security interests or encumbrances arising out of the Contract, to the extent and in such form as may be designated by the Board, and (6) all Work and corrections are made to the satisfaction of the Board. Additionally, final payment shall not be due and payable until the following submittals are made to the Board: (1) delivery of extra materials as outlined in the Specifications; (2) all operating and maintenance manuals, training schedules and demonstrations; (3) all test reports; (4) all equipment and materials guaranties and warranties; (5) the final inspection certificate; (6) all as-built drawings; (7) a payment of prevailing wage affidavit; (8) release of all liens; and (9) a one (1) year written project guarantee for workmanship, equipment and materials. If a Subcontractor or Sub-subcontractor refuses to furnish a release or waiver required by the Board, the Contractor may furnish a bond satisfactory to the Board to indemnify the Board against such lien. If such lien remains unsatisfied after payments are made, the Contractor shall refund to the Board all money that the Board may be compelled to pay in discharging such lien, including all costs and reasonable attorneys' fees.

9.9.3 If, after Substantial Completion of the Work, final completion thereof is materially delayed through no fault of the Contractor or by issuance of Change Orders affecting final completion, and the Engineer so confirms, the Board shall, upon application by the Contractor and recommendation for certification by the Engineer, and without terminating the Contract, make payment of the balance due for that portion of the Work fully completed and accepted to the extent deemed warranted in the Board's discretion. If the remaining balance for Work not fully completed or corrected is less than retainage stipulated in the Contract Documents, and if bonds have been furnished, the written

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consent of surety to payment of the balance due for that portion of the Work fully completed and accepted shall be submitted by the Contractor to the Board with copies to the Engineer prior to certification of such payment. Such payment shall be made under terms and conditions governing final payment and it shall not constitute a waiver of claims. The making of final payment also shall only constitute a waiver of claims by the Board to the extent provided in Subparagraph 4.2.5.

9.9.4 Acceptance of final payment by the Contractor, a Subcontractor, Sub-subcontractor or material supplier shall constitute a waiver of claims by that payee except those previously made in writing and identified by that payee as unsettled at the time of final Application for Payment.

9.10 Retainage Escrow Agreement

9.10.1 After award of the Contract and before completion of fifty percent (50%) of the Work, the Contractor may establish an escrow account with the Board's concurrence in accordance with Ohio Revised Code Sections 153.12, 153.13, 153.14, 153.63, and 153.80, as may be amended. If such an escrow account is established, the Board will deposit all funds retained by it on the first fifty percent (50%) of the completed Work pursuant to said Ohio Revised Code Sections. Upon final acceptance of the Work by the Board, a notice will be sent to the escrow agent for release of such escrowed funds to the Contractor in accordance with Ohio Revised Code Section 153.63. The escrow agent hereunder must be a Board approved depository institution qualified under Ohio Revised Code Section 135.03 et seq. and must be located within the geographical confines of Montgomery County, Ohio.

9.10.2 In regard to the amount of any funds retained, the Board, in its sole discretion, may reduce the amount of funds retained pursuant to section 153.12 and 153.14 of the Ohio Revised Code for the faithful performance of work by fifty per cent of the amount of funds required to be retained pursuant to those sections, provided that the surety on the bond remains liable for all of the following that are caused due to default by the Contractor:

- 9.10.2.1 Completion of the job;
- 9.10.2.2 All delay claims;
- 9.10.2.3 All liquidated damages;
- 9.10.2.4 All additional expenses incurred by the contracting authority.

9.10.3 As used in Sub-paragraph 9.10.2, "Delay claim" means a claim that arises due to default on provisions in the Contract in regard to the time when the Work or any specified portion of the Work must be completed.

ARTICLE 10 - PROTECTION OF PERSONS AND PROPERTY

10.1 Safety Precautions and Programs

10.1.1 The Contractor shall be responsible for initiating, maintaining and supervising all safety precautions and programs in connection with the performance of the Contract.

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10.1.2 In the event the Contractor encounters on the site material reasonably believed to be asbestos, lead paint, polychlorinated biphenyl (PCB), or any other environmental hazard which has not been rendered harmless, the Contractor shall immediately stop Work in the area affected and report the condition to the Board and Engineer in writing. The Work in the affected area shall not thereafter be resumed except by written agreement of the Board and Contractor if in fact the material is asbestos, lead paint, polychlorinated biphenyl (PCB), or any other environmental hazard and has not been rendered harmless. The Work in the affected area shall be resumed in the absence of asbestos, lead paint, polychlorinated biphenyl (PCB), or any other environmental hazard or when it has been rendered harmless, by written agreement of the Board and Contractor, or in accordance with final determination by the Engineer. The term "rendered harmless" shall be interpreted to mean that levels of asbestos, lead paint, PCB, or any other environmental hazard are less than any applicable exposure standards set forth in OSHA regulations. However, in no event shall the Board have any responsibility for any substance or material that is brought to the Project site by the Contractor, any Subcontractor, Sub-subcontractor or materialman or supplier or any entity for whom any of them is responsible.

10.1.3 The Contractor shall not be required pursuant to Article 7 to perform without consent any Work relating to asbestos or polychlorinated biphenyl (PCB).

10.1.4 The Contractor agrees not to use any fill or other materials to be incorporated into the Work which are hazardous, toxic or otherwise dangerous or comprised of any items that are hazardous, toxic or otherwise dangerous, unless otherwise provided for in the Contract Documents.

10.2 Safety of Persons and Property

10.2.1 The Contractor shall take reasonable precautions for safety of, and shall provide reasonable protection to prevent damage, injury or loss to:

10.2.1.1 employees on the Work and other persons who may be affected thereby;

10.2.1.2 the Work and materials and equipment to be incorporated therein, whether in storage on or off the site, under care, custody or control of the Contractor or the Contractor's Subcontractors or Sub-subcontractors; and

10.2.1.3 other property at the site or adjacent thereto, such as trees, shrubs, lawns, walks, pavements, roadways, structures and utilities not designated for removal, relocation or replacement in the course of construction.

10.2.2 The Contractor shall give notices and comply with all applicable laws, ordinances, rules, regulations and lawful orders of public authorities bearing on safety of persons or property or their protection from damage, injury or loss.

10.2.3 The Contractor shall erect and maintain, as required by existing conditions, by the Contract Documents, by all applicable laws, ordinances, rules, regulations or orders of public authorities having jurisdiction, and by performance of the Contract, reasonable safeguards for safety and protection, including posting danger signs and other warnings against hazards, promulgating safety regulations and notifying owners and users of adjacent sites and utilities. The Contractor shall also be responsible, at the Contractor's sole cost and expense, for all measures necessary to protect any

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property adjacent to the Project and improvements therein. Any damage to such property or improvements shall be promptly repaired by the Contractor.

10.2.4 When use or storage of explosives or other hazardous materials or equipment or unusual methods are necessary for execution of the Work, the Contractor shall exercise utmost care and carry on such activities under supervision of properly qualified personnel. The Board must be informed at least two (2) days in advance of any day upon which explosives or other hazardous materials or equipment or unusual methods are necessary. Contractor must maintain Material Safety Data Sheets in accordance with Subparagraph 2.1.2.

10.2.5 The Contractor shall promptly remedy damage and loss (other than damage or loss insured under property insurance required by the Contract Documents) to property referred to in Clauses 10.2.1.2 and 10.2.1.3 caused in whole or in part by the Contractor, a Subcontractor, a Sub-subcontractor, or anyone directly or indirectly employed by any of them, or by anyone for whose acts they may be liable and for which the Contractor is responsible under Clauses 10.2.1.2 and 10.2.1.3, except damage or loss attributable to acts or omissions of the Board or Engineer or anyone directly or indirectly employed by either of them, or by anyone for whose acts either of them may be liable, and not attributable to the fault or negligence of the Contractor. The foregoing obligations of the Contractor are in addition to the Contractor's obligations under Paragraph 3.17.

10.2.6 The Contractor shall designate a responsible member of the Contractor's organization at the site whose duty shall be the prevention of accidents. This person shall be the Contractor's superintendent unless otherwise designated by the Contractor in writing to the Board and Engineer.

10.2.7 The Contractor shall not load or permit any part of the construction or site to be loaded so as to endanger its safety.

10.2.8 When all or a portion of the Work is suspended for any reason, the Contractor shall securely fasten down all coverings and protect the Work, as necessary, from injury by any cause.

10.2.9 The Contractor shall promptly report in writing to the Board and Engineer all accidents arising out of or in connection with the Work which cause death, personal injury, or property damage, giving full details and statements of any witnesses. In addition, if death, serious personal injuries, or serious property damages occur, the accident shall be reported immediately by telephone or messenger to the Board or its authorized representative and to the Engineer or its authorized representative.

10.3 Emergencies

10.3.1 In an emergency affecting safety of persons or property, the Contractor shall act, at the Contractor's discretion, to prevent threatened damage, injury or loss. Additional compensation or extension of time claimed by the Contractor on account of an emergency shall be determined as provided in Paragraph 4.2 and Article 7.

ARTICLE 11 - INSURANCE AND BONDS

11.1 Contractor's Liability Insurance

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11.1.1 The Contractor shall purchase from and maintain in a company or companies lawfully authorized to do business in the State of Ohio such insurance as will protect the Contractor and the Board from claims set forth below which may arise out of or result from the Contractor's operations under the Contract and for which the Contractor may be legally liable, whether such operations be by the Contractor, by a Subcontractor, or by a Sub-subcontractor or by anyone directly or indirectly employed by any of them, or by anyone for whose acts any of them may be liable:

- 11.1.1.1 claims under workers' or workmen's compensation, disability benefit and other similar employee benefit acts which are applicable to the Work to be performed;
- 11.1.1.2 claims for damages because of bodily injury, occupational sickness, sickness or disease, or death of the Contractor's employees;
- 11.1.1.3 claims for damages because of bodily injury, occupational sickness, sickness or disease, or death of any person other than the Contractor's employees;
- 11.1.1.4 claims for damages insured by usual personal injury liability coverage which are sustained (1) by a person as a result of an offense directly or indirectly related to employment of such person by the Contractor, or (2) by another person;
- 11.1.1.5 claims for damages, other than to the Work itself, because of injury to or destruction of tangible property, including loss of use resulting therefrom;
- 11.1.1.6 claims for damages because of bodily injury, death of a person or property damage arising out of ownership, maintenance or use of a motor vehicle;
- 11.1.1.7 claims involving contractual liability insurance applicable to the Contractor's obligations under Paragraph 3.17; and
- 11.1.1.8 the Contractor's liability insurance shall include all major divisions of coverage and be on a comprehensive basis including, without limitation:
 - 11.1.1.8.1 Premises/Operations (including X, C and U coverages as applicable;
 - 11.1.1.8.2 Independent Contractor's Protective;
 - 11.1.1.8.3 Products and Completed Operations;
 - 11.1.1.8.4 Personal Injury Liability with Employment Exclusion Deleted;
 - 11.1.1.8.5 Contractual, including specified provision for Contractor's obligations under Paragraph 3.17;
 - 11.1.1.8.6 Owned, non-owned and hired motor vehicles; and

11.1.1.8.7 Broad Form Property Damage including Completed Operations.

11.1.2 The insurance policy required by Subparagraph 11.1.1 shall be written for not less than five hundred thousand dollars (\$500,000.00) for any person injured in any accident and with a total liability of one million dollars (\$1,000,000.00) for all persons injured in any one (1) accident and the amount of five hundred thousand dollars (\$500,000.00) for each accident or occurrence as compensation for damage caused to property of others. Coverages, whether written on an occurrence or claims-made basis, shall be maintained without interruption from date of commencement of the Work until date of final payment and termination of any coverage required to be maintained after final payment.

11.1.3 Certificates of Insurance acceptable to the Board shall be filed with the Board prior to commencement of the Work. These Certificates and the insurance policies required by this Paragraph 11.1 shall contain a provision that coverages afforded under the policies will not be canceled or allowed to expire until at least thirty (30) days' prior written notice has been given to the Board. If any of the foregoing insurance coverages are required to remain in force after final payment and are reasonably available, an additional certificate evidencing continuation of such coverage shall be submitted with the final Application for Payment as required by Subparagraph 9.9.2. Information concerning reduction of coverage shall be furnished by the Contractor with reasonable promptness in accordance with the Contractor's information and belief.

11.1.4 The insurance policy described in this Paragraph 11.1 shall name the Board as an insured or provide Owners and Contractors Protective Liability Insurance naming the Board as the insured party.

11.2 Board's Liability Insurance

11.2.1 The Board is self insured and shall not be responsible for purchasing or maintaining any insurance in any amount or of any kind. In the Board's sole discretion, the Board may purchase and maintain insurance for self-protection against claims which may arise from operations under the Contract. The Contractor shall not be responsible for purchasing and maintaining this optional Board's liability insurance unless specifically required by the Contract Documents.

11.3 Property Insurance

11.3.1 The Board is self insured and shall not be required to purchase or maintain property insurance in any amount or of any kind. In the Board's sole discretion, such property insurance may be purchased and maintained in any form or amount which the Board determines. The Contractor shall not be responsible for purchasing and maintaining this optional Board's property insurance unless specifically required by the Contract Documents.

11.3.1.1 If the Board intends to purchase such optional property insurance as allowed by these Conditions with all of the coverages in the amount described above, the Board shall so inform the Contractor in the Contract Documents. If the Contract Documents do not provide for the Board obtaining such insurance, the Contractor may then effect insurance which will protect the interests of the Contractor, Subcontractors and Sub-subcontractors in the Work and the cost thereof shall be at the Contractor's sole expense. The Contractor shall have no claim against the Board, its

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employees, agents, successors, or assigns for any damage stemming from the failure or neglect of the Board to purchase or maintain insurance as described above or from the failure of the Board to notify the Contractor of its intentions relative to such insurance. Such property insurance provided by the Board shall not cover any tools, apparatus, machinery, scaffolding, hoists, forms, staging, shoring and other similar items commonly referred to as construction equipment, which may be on the site and the capital value of which is not included in the Work. The Contractor shall make its own arrangements for any insurance it may require on such construction equipment. Any such policy obtained by the Contractor under this Paragraph 11.3.1 shall include a waiver of subrogation in accordance with the requirements of Paragraph 11.3.7.

11.3.1.2 If the optional property insurance requires minimum deductibles and such deductibles are identified in the Contract Documents, the Contractor shall pay costs not covered because of such deductibles. If the Board or insurer increases the required minimum deductibles above the amounts so identified or if the Board elects to purchase this insurance with voluntary deductible amounts, the Board shall be responsible for payment of the additional costs not covered because of such increased or voluntary deductibles. If deductibles are not identified in the Contract Documents, the Board shall pay costs not covered because of deductibles.

11.3.1.3 Unless otherwise provided in the Contract Documents, this optional property insurance may cover portions of the Work stored off the site after written approval of the Board at the value established in the approval, and also portions of the Work in transit.

11.3.2 Boiler and Machinery Insurance. The Board is self insured and shall not be required to purchase or maintain boiler and machinery insurance in any amount or form except to the extent required by law. Should such insurance be purchased and maintained at the Board's option or pursuant to law, such policy shall specifically cover such insured objects during installation and until final acceptance by the Board; this insurance shall include interests of the Board, Contractor, Subcontractors and Sub-subcontractors in the Work, and the Board and Contractor shall be named insured to the extent required by law. The Contractor shall not be responsible for purchasing and maintaining this optional Board's boiler and machinery insurance unless specifically required by the Contract Documents.

11.3.3 Loss of Use Insurance. The Board, at the Board's option, may purchase and maintain such insurance as will insure the Board against loss of use of the Board's property due to fire or other hazards, however caused. The Contractor shall not be responsible for purchasing and maintaining this optional Board's loss of use insurance unless specifically required by the Contract Documents.

11.3.4 If the Contractor requests in writing that insurance for risks other than those described herein or for other special hazards be included in the property insurance policy, the Board may, in its sole discretion, include such insurance, and the cost thereof shall be charged to the Contractor by appropriate Change Order.

11.3.5 If during the Project construction period the Board insures properties, real or personal or both, adjoining or adjacent to the site by property insurance under policies separate from those insuring the Project which are in addition to any self insurance, or if after final payment property

insurance is to be provided on the completed Project through a policy or policies other than those insuring the Project during the construction period which are in addition to any self insurance, the Board shall waive all rights in accordance with the terms of Subparagraph 11.3.7 for damages caused by fire or other perils covered by this separate property insurance but only those rights specified according to the terms of Subparagraph 11.3.7. All separate policies that are not by way of self insurance by the Board shall provide this waiver of subrogation by endorsement or otherwise.

11.3.6 Before an exposure to loss may occur, the Board shall file with the Contractor a certificate of insurance evidencing such insurance coverages optionally obtained by this Paragraph 11.3. Each such policy shall contain all generally applicable conditions, definitions, exclusions and endorsements related to this Project. Each such policy shall contain a provision that the policy will not be canceled or allowed to expire until at least thirty (30) days' prior written notice has been given to the Contractor.

11.3.7 Waiver of Subrogation. If permitted by the Board's and the Contractor's insurance companies without penalties, the Board and Contractor waive all rights against (1) each other and any of their subcontractors, sub-subcontractors, agents and employees, each of the other, and (2) the Engineer, Engineer's consultants, separate contractors described in Article 6, if any, and any of their subcontractors, sub-subcontractors, agents and employees, for damages caused by fire or other perils to the extent of actual recovery of any insurance proceeds under any property insurance policy obtained pursuant to this Paragraph 11.3 or other optional property insurance applicable to the Work, except such rights as they have to proceeds of such insurance held by the Board in good faith. The Board or Contractor, as appropriate, shall require of the Engineer, Engineer's consultants, separate contractors described in Article 6, if any, and the subcontractors, sub-subcontractors, agents and employees of any of them, by appropriate agreements, written where legally required for validity, similar waivers each in favor of other parties enumerated herein. The optional policies shall provide such waivers of subrogation by endorsement or otherwise. A waiver of subrogation shall be effective as to a person or entity even though that person or entity would otherwise have a duty of indemnification, contractual or otherwise, did not pay the insurance premium directly or indirectly, and whether or not the person or entity had an insurable interest in the property damaged.

11.3.8 A loss insured under the Board's property insurance shall be adjusted by the Board in good faith and made payable to the Board in good faith for the insureds, as their interests may appear, subject to requirements of any applicable mortgagee clause and of Subparagraph 11.3.10. The Contractor shall pay Subcontractors their just shares of insurance proceeds received by the Contractor, and by appropriate agreements, written where legally required for validity, shall require Subcontractors to make payments to their Sub-subcontractors in similar manner.

11.3.9 The Board in good faith upon occurrence of an insured loss shall not be required to give bond for proper performance of the Board's duties. The Board shall deposit in a separate account within its general fund proceeds so received, which the Board shall distribute in accordance with such agreement as the parties in interest may reach, or in accordance with a valid order of a court of competent jurisdiction. If after such loss no other special agreement is made, replacement of damaged property shall be covered by appropriate Change Order.

11.3.10 The Board in good faith shall have sole power to adjust and settle a loss with insurers. Any objection to said power by a party in interest shall be presented by letter to the Board within seven (7) days after the occurrence of the loss. The Board may reject such objection in its sole

discretion. The Board may make settlement with the insurers or may notify the party filing such objection in writing within ten (10) days after the Board's receipt of the objection of the Board's decision to disregard the objection.

11.3.11 Partial occupancy or use in accordance with Paragraph 9.8 shall not commence until the insurance company or companies providing property insurance, if any, have consented to such partial occupancy or use by endorsement or otherwise. The Board and the Contractor shall take reasonable steps to obtain consent of the insurance company or companies, if any, and shall, without mutual written consent, take no action with respect to partial occupancy or use that would cause cancellation, lapse or reduction of any such insurance.

11.4 Performance Bond and Payment Bond

11.4.1 The Contractor shall furnish a bond to the Board covering faithful performance of the Contract and payment of obligations arising thereunder in the amount equal to one hundred percent (100%) of the Contract Sum. Said bond shall be conditioned upon the faithful performance of the Contract. Said bond shall be drafted and executed according to the form mandated by Ohio Revised Code Chapter 153. The surety for said bond shall be a responsible surety company authorized to do business in the State of Ohio. The attorney in fact who executes the required bonds on behalf of the surety shall affix thereto a certified and current copy of his or her power of attorney indicating the monetary limit of such power.

11.4.2 Upon the request of any person or entity appearing to be a potential beneficiary of bonds covering payment of obligations arising under the Contract, the Contractor shall promptly furnish a copy of the bonds or shall permit a copy to be made.

11.4.3 The Contractor shall keep the surety informed in writing of the progress of the Work, and, obtain where necessary, in writing, the surety's consent to, or waiver of: (1) notice of changes in the Work; (2) request for reduction or release of retention; (3) request for final payment; and (4) any other material required by the surety. The Board shall be notified by the Contractor, in writing, of all written communications with the surety. The Board may, in its sole discretion, inform the surety of the progress of the Work and obtain consents as necessary to protect the Board's rights, interest, privileges and benefits under and pursuant to any bond issued in connection with the Work.

11.4.4 The Board, in its sole discretion, may reduce the bond required by twenty-five per cent of the total amount of the bond after at least fifty per cent of the work contracted for has been completed and by fifty per cent after at least seventy-five per cent of the work contracted for has been completed provided that all of the following conditions are met:

- 11.4.4.1 The Board determines that the percentage of the work that has been completed at the time of determination has been satisfactorily performed and meets the terms of the Contract, including any provision in regard to the time when the whole or any specified portion of work contemplated in the Contract must be completed;
- 11.4.4.2 The Board determines that no disputed claim caused by the contractor exists or remains unresolved;

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- 11.4.4.3 The successful bid upon which the Contract is based was not more than ten per cent below the next lowest bid or not more than ten per cent below a cost estimate for the work as published by the Board.

11.5 Worker's Compensation Insurance

11.5.1 The Contractor shall take out and maintain during the life of the Contract Workers' Compensation Insurance for its employees and shall furnish a certificate of Workers' Compensation Insurance for its employees before the execution of the Agreement. No Contract between the Board and the Contractor shall exist until a fully executed copy thereof has been served upon to the Board.

11.6 General Requirements

11.6.1 All insurance coverage procured by the Contractor shall be provided by insurance companies licensed to do business in Ohio having policyholder ratings no lower than "A" and financial ratings not lower than "XII" in the Best's Insurance Guide, latest edition in effect as of the date of the Contract, and subsequently in effect at the time of renewal of any policies required by the Contract Documents.

11.6.2 If the Board is damaged by the failure of the Contractor to purchase or maintain insurance as required under Article 11, then the Contractor shall bear all reasonable costs (including, without limitation, attorney fees and court and settlement expenses) properly attributable thereto in addition to any other relief due the Board.

ARTICLE 12 - UNCOVERING AND CORRECTION OF WORK

12.1 Uncovering of Work

12.1.1 If a portion of the Work is covered contrary to the Engineer's or Board's request or to requirements specifically expressed in the Contract Documents, it must, if required in writing by the Engineer or the Board, be uncovered for the Engineer's or Board's observation and be replaced at the Contractor's expense without change in the Contract Time. If prior to the date of Substantial Completion, the Contractor, a Subcontractor, a Sub-subcontractor or anyone for whom either is responsible uses or damages any portion of the Work, including, without limitation, mechanical, electrical, plumbing and other building systems, machinery, equipment or other mechanical devise, the Contractor shall cause such item to be restored to "like new" condition at no expense to the Board.

12.1.2 If a portion of the Work has been covered which the Engineer or Board has not specifically requested to observe prior to its being covered, the Board, or the Engineer with written consent of the Board, may request to see such Work and it shall be uncovered by the Contractor. If such Work is in accordance with the Contract Documents, costs of uncovering and replacement shall, by appropriate Change Order, be charged to the Board. If such Work is not in accordance with the Contract Documents, the Contractor shall pay such costs unless the condition was caused by the Board or a separate contractor in which event the Board shall be responsible for payment of such costs and may recoup such cost from such separate contractor as applicable.

12.2 Correction of Work

12.2.1 The Contractor shall promptly correct Work rejected by the Engineer or Board or failing to conform to the requirements of the Contract Documents, whether observed before or after Substantial Completion and whether or not fabricated, installed or completed. The Contractor shall bear costs of correcting such rejected Work, including additional testing and inspections and compensation for the Engineer's services and expenses made necessary thereby. If prior to the date of Substantial Completion, the Contractor, a Subcontractor or anyone for whom either is responsible uses or damages any portion of the Work, including, without limitation, mechanical, electrical, plumbing, HVAC, security, fire prevention and other building systems, machinery, equipment, or other mechanical device, the Contractor shall cause such item to be restored to "like new" condition at no expense to the Board.

12.2.2 If, within one (1) year after the date of Substantial Completion of the Work or designated portion thereof, or after the date for commencement of warranties established under Subparagraph 9.8.1 or by terms of an applicable special warranty required by the Contract Documents, any of the Work is found to be not in accordance with the requirements of the Contract Documents, the Contractor shall correct it promptly after receipt of written notice from the Board to do so unless the Board has previously given Contractor a written acceptance of such specific condition. This period of one (1) year shall be extended with respect to portions of Work first performed after Substantial Completion and the actual performance of the Work. This obligation under this Subparagraph 12.2.2 shall survive acceptance of the Work under the Contract and termination of the Contract. The obligations under this Paragraph 12.2 shall cover any repairs and replacement to any part of the Work or other property caused by the defective Work. Upon completion of any Work under or pursuant to this Paragraph 12.2, the one (1) year correction period in connection with the Work requiring correction shall be renewed and recommence.

12.2.3 The Contractor shall remove from the site at its own expense portions of the Work which are not in accordance with the requirements of the Contract Documents and are neither corrected by the Contractor nor accepted by the Board.

12.2.4 If the Contractor fails to correct nonconforming Work within a reasonable time, the Board may correct it in accordance with Paragraph 2.3. If the Contractor does not proceed with correction of such nonconforming Work within a reasonable time fixed by written notice from the Engineer or Board, the Board may remove it and store the salvable materials or equipment at the Contractor's expense. If the Contractor does not pay costs of such removal and storage within ten (10) days after written notice, the Board may, upon ten (10) additional days' written notice, sell such materials and equipment at auction or at private sale and shall account for the proceeds thereof, after deducting costs and damages that should have been borne by the Contractor, including compensation for the Engineer's services and expenses made necessary thereby. If such proceeds of sale do not cover costs which the Contractor should have borne, the Contract Sum shall be reduced by the deficiency. If payments then or thereafter due the Contractor are not sufficient to cover such amount, the Contractor shall pay the difference to the Board.

12.2.5 The Contractor shall bear the cost of correcting destroyed or damaged construction, whether completed or partially completed, of the Board or separate contractors caused by the Contractor's correction or removal of Work which is not in accordance with the requirements of the Contract Documents.

12.2.6 Nothing contained in this Paragraph 12.2 shall be construed to establish a period of limitation with respect to other obligations which the Contractor might have under the Contract Documents. Establishment of the time period of one (1) year as described in Subparagraph 12.2.2 relates only to the specific obligation of the Contractor to correct the Work, and has no relationship to the time within which the obligation to comply with the Contract Documents may be sought to be enforced, nor to the time within which proceedings may be commenced to establish the Contractor's liability with respect to the Contractor's obligations other than specifically to correct the Work.

12.3 Acceptance of Nonconforming Work

12.3.1 If the Board prefers to accept Work which is not in accordance with the requirements of the Contract Documents, the Board may do so instead of requiring its removal and correction, in which case the Contract Sum will be reduced as appropriate and equitable. Such adjustment shall be effected whether or not final payment has been made. If the parties cannot agree as to the amount of such reduction, the Engineer shall state its opinion as to the amount of such reduction, which opinion shall be binding upon both parties.

ARTICLE 13 - MISCELLANEOUS PROVISIONS

13.1 Written Notice

Written notice to parties other than the Board shall be deemed to have been duly served if delivered in person to the individual or a member of the firm or entity or to an officer of the corporation for which it was intended, or if delivered at or sent by registered or certified mail to the address of the intended party as stated at the beginning of the Agreement, unless such address is changed in a subsequent writing received by the serving party. Written notice to the Board shall be deemed to have been duly served if delivered in person to the Board's authorized representative, which for notice purposes shall in no case be the Engineer except where the Board serves as the Engineer and no other representative is authorized, or if delivered at or sent by registered or certified mail to the following address unless such address is changed in a subsequent writing received by the serving party:

David L. Ricks
Director, Department of Public Works
Montgomery County Administration Building
P.O. Box 972
451 West Third Street
Dayton, Ohio
45422

13.2 Rights and Remedies

13.2.1 Except to the extent expressly provided in the Contract Documents, duties and obligations imposed by the Contract Documents and rights and remedies available thereunder shall be in addition to and not a limitation of duties, obligations, rights and remedies otherwise imposed or available by law.

13.2.2 No action or failure to act by the Board, Engineer or Contractor shall constitute a waiver of a right, remedy, duty or obligation afforded them under the Contract, nor shall such action or failure to act constitute approval of or acquiescence in a breach thereunder, except as may be specifically agreed in writing.

13.3 Tests and Inspections

13.3.1 Tests, inspections and approvals of portions of the Work required by the Contract Documents or by laws, ordinances, rules, regulations or orders of public authorities having jurisdiction shall be made at an appropriate time. Unless otherwise provided, the Contractor shall make arrangements for such tests, inspections and approvals with an independent testing laboratory or entity acceptable to the Board, or with the appropriate public authority, and shall bear all related costs of tests, inspections and approvals. The Contractor shall give the Engineer and Board timely notice of when and where tests and inspections are to be made so the Engineer and Board may observe such procedures. The Board shall only bear costs of tests, inspections or approvals which do not become requirements until after bids are received or negotiations concluded.

13.3.2 If the Engineer, Board or public authorities having jurisdiction determine that portions of the Work require additional testing, inspection or approval not included under Subparagraph 13.3.1, the Engineer will, upon written authorization from the Board, instruct the Contractor to make arrangements for such additional testing, inspection or approval by an entity acceptable to the Board, and the Contractor shall give timely notice to the Engineer and Board of when and where tests and inspections are to be made so the Engineer and/or Board may observe such procedures. The Board shall bear such costs except as provided in Subparagraph 13.3.3.

13.3.3 If such procedures for testing, inspection or approval under Subparagraphs 13.3.1 and 13.3.2 reveal failure of the portions of the Work to comply with requirements established by the Contract Documents, the Contractor shall bear all costs made necessary by such failure including those of repeated procedures and compensation for the Engineer's services and expenses. The Contractor also agrees that the cost of testing services required for the convenience of the Contractor in its scheduling and performance of the Work, and the cost of testing services related to remedial operations performed to correct deficiencies in the Work shall be borne by the Contractor.

13.3.4 Required certificates of testing, inspection or approval shall, unless otherwise required by the Contract Documents, be secured by the Contractor and promptly delivered to the Board with complete and accurate copies promptly delivered to the Engineer.

13.3.5 If the Engineer is to observe tests, inspections or approvals required by the Contract Documents, the Engineer will do so promptly and, where practicable, at the normal place of testing.

13.3.6 Tests or inspections conducted pursuant to the Contract Documents shall be made promptly to avoid unreasonable delay in the Work.

13.3.7 All such tests shall be in accordance with the methods approved by AASHTO, ASTM, ANSI, or such other applicable organizations as may be required by law, the Contract Documents, or as recommended by the Board.

13.3.8 Observations, inspections and tests by the Board or Engineer are for the sole benefit of the Board. Observations, inspections or tests by the Board or Engineer or observations, inspections, tests or approvals by persons other than the Contractor, shall NOT:

- 13.3.8.1 relieve the Contractor from any obligation to perform Work in accordance with the requirements of the Contract Documents;
- 13.3.8.2 relieve the Contractor from providing adequate quality control measures;
- 13.3.8.3 relieve the Contractor of responsibility for damage to or loss of material before acceptance;
- 13.3.8.4 constitute or imply acceptance; or
- 13.3.8.5 affect the continuing rights of the Board after acceptance of the completed Work.

13.4 Non-Discrimination

13.4.1 During the performance of the Contract, the Contractor will not discriminate against any employee or applicant for employment because of race, color, religion, sex, sexual orientation, national origin, ancestry, handicap, age, political belief or place of birth. The Contractor will ensure that applicants are employed and that employees are treated during employment without regard to race, color, religion, sex, sexual orientation, national origin, ancestry, handicap, age, political belief or place of birth. Such action shall include, but shall not be limited to, the following: employment, upgrading, demotion or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship.

13.4.2 The Contractor or any person claiming through the Contractor, agrees not to establish or knowingly permit any such practice or practices of discrimination of segregation as referred to in Subparagraph 13.5.1 in reference to anything relating to the Agreement, or in reference to any Subcontractors or Sub-subcontractors of the Contractor.

13.5 Disclosure

13.5.1 The Contractor hereby covenants that it has complied with the Board's disclosure policy adopted pursuant to Resolution No. 83-112, dated January 18, 1983, which requires anyone contracting with the Board to disclose to the Board any business relationship or financial interest that it has with a Montgomery County, Ohio employee or employee's business, or any business relationship or financial interest that a Montgomery County, Ohio employee has with the contracting party or in the contracting party's business. The Contractor hereby agrees to and acknowledges a continuing obligation to so disclose said information to the Board.

ARTICLE 14 - TERMINATION OR SUSPENSION OF THE CONTRACT

14.1 Termination by the Contractor

14.1.1 The Contractor may terminate the Contract if the Work is stopped for a period of sixty (60) days through no act or fault of the Contractor or a Subcontractor, Sub-subcontractor or their agents or employees or any other persons performing portions of the Work under contract with the Contractor, for any of the following reasons:

14.1.1.1 issuance of an order of a court or other public authority having jurisdiction;

14.1.1.2 an act of government, such as a declaration of national emergency, making material unavailable.

14.1.2 If one (1) of the above reasons exists, the Contractor may, upon seven (7) additional days' written notice to the Board and Engineer, terminate the Contract and recover from the Board payment for Work executed and for proven loss with respect to materials, equipment, tools, and construction equipment and machinery, including reasonable overhead, profit and damages.

14.1.3 If the Work is stopped for a period of sixty (60) days through no act or fault of the Contractor or a Subcontractor or their agents or employees or any other persons performing portions of the Work under some contract with the Contractor because the Board has persistently failed to fulfill the Board's obligations under the Contract Documents with respect to matters important to the progress of the Work, the Contractor may, upon seven (7) additional days' written notice supplied to both the Board and the Engineer, terminate the Contract and recover from the Board as provided in Subparagraph 14.1.2.

14.2 Termination by the Board for Cause

14.2.1 In addition to any other remedy available herein, the Board may terminate the Contract if the Contractor:

14.2.1.1 persistently or repeatedly refuses or fails to supply enough properly skilled workers or proper materials;

14.2.1.2. fails to make payments to Subcontractors for materials or labor in accordance with the respective agreements between the Contractor and the various Subcontractors;

14.2.1.3 persistently disregards laws, ordinances, or rules, regulations or orders of a public authority having jurisdiction;

14.2.1.4 otherwise is guilty of substantial breach of a provision of the Contract Documents;

14.2.1.5 is in breach of any warranty or representation in the Contract Documents;

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- 14.2.1.6 fails to materially comply with the Board's construction schedule;
- 14.2.1.7 fails to proceed continuously with the construction and completion of the Work; or
- 14.2.1.8 fails to furnish the Board with assurances satisfactory to the Board evidencing the Contractor's ability to complete the Work in compliance with all the requirements of the Contract Documents.

14.2.2 When any of the conditions in Subparagraph 14.2.1 exist, the Board may, seven (7) days after giving the Contractor and the Contractor's surety, if any, written notice, without prejudice to any other rights or remedies of the Board, terminate employment of the Contractor and may, subject to any prior rights of the surety, if any:

- 14.2.2.1 take possession of the site and of all materials, equipment, tools, and construction equipment and machinery thereof owned by the Contractor;
- 14.2.2.2 accept assignment of subcontracts pursuant to Paragraph 5.4; and
- 14.2.2.3 finish the Work by whatever reasonable method the Board may deem expedient.

14.2.3 When the Board terminates the Contract for one (1) of the reasons stated in Subparagraph 14.2.1, the Contractor shall not be entitled to receive further payment until the Work is finished.

14.2.4 If the unpaid balance of the Contract Sum exceeds costs of finishing the Work, including, without limitation, compensation for Engineer's services and any other loss, cost, damage or expense incurred or suffered by the Board as a result of any of the occurrences listed in 14.2.1 above, such excess shall be paid to the Contractor. If such costs exceed the unpaid balance, the Contractor shall pay the difference to the Board.

14.3 Termination by the Board for Convenience

14.3.1 The Board may, at any time, terminate the Contract in whole or in part for the Board's convenience and without cause. The Board's termination under this Paragraph shall be by a notice of termination delivered to the Contractor specifying the extent of termination and the effective date.

14.3.2 Upon receipt of a notice of termination for convenience, the Contractor shall immediately, in accordance with instructions from the Board, proceed with performance of the following duties regardless of delay in determining or adjusting amounts due under this Paragraph:

- 14.3.2.1 cease operation as specified in the notice;
- 14.3.2.2 place no further orders and enter into no further subcontracts for materials, labor, services or facilities except as necessary to complete continued portions of the Contract;

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- 14.3.2.3 terminate all subcontracts and orders to the extent they relate to the Work terminated by way of the notice;
- 14.3.2.4 proceed to complete the performance of the Work not terminated; and
- 14.3.2.5 take actions that may be necessary, or that the Board may direct, for the protection and preservation of the terminated Work.

14.3.3 Upon such termination, the Contractor shall recover as its sole remedy payment for Work properly performed in connection with the terminated portion of the Work prior to the effective date of termination and for items properly and timely fabricated off the Project site, delivered and stored in accordance with the Board's instructions. The Contractor hereby waives and forfeits all other claims for payment and damages, including, without limitation, anticipated profits.

14.3.4 Notwithstanding any other provision in the Contract Documents, the Board shall be credited for (1) payments previously made to the Contractor for the terminated portion of the Work, (2) claims which the Board has against the Contractor under the Contract and (3) the value of the materials, supplies, equipment or other items that are to be disposed of by the Contractor that are part of the Contract Sum.

* * * END OF GENERAL CONDITIONS * * *

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BIDDER'S PROPOSAL

SUBMIT ORIGINAL AND ONE COPY

By: _____

Company: _____

Address: _____

City: _____ St: _____ Zip: _____

Phone: _____ Ext: _____

Contact: _____

Hon. Board of County Commissioners
Montgomery County
Dayton, OH 45422

Commissioners:

The undersigned having full knowledge of the Site, Plans, and Specifications for the following improvement, hereby agrees to furnish all materials, labor and equipment, and to complete in a workmanlike manner all the Work required for the following improvement:

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In accordance with the Plans and Specifications therefore on file in the office of and under the direction of the Director of Public Works or his authorized representative, the rates hereinafter are set forth.

Each laborer, workman or mechanic employed by the Contractor, the subcontractor, or any person about or upon the Work to be performed will be paid not less than the prevailing wages as required by the statutes of the state of Ohio. (Sections 4115.02 to 4115.14 O.R.C.). Minimum wages are those paid in the same trade or occupation in the locality where such public work is being performed, under collective agreements or understanding between bona fide organizations of labor and employers as determined by the Department of Industrial Relations.

PROPOSAL

We have received the following addendum(s) and the signed acknowledgments are attached:

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All bidders shall show price for labor and material separately, both written in words and shown in figures. No bid (N.B.) bids shall be clearly marked in the appropriate areas.

Bidders shall submit complete Bid Proposals for Base Bid, including each break-out price identified on bid form, each Unit Price, and each Alternate.

GENERAL CONTRACT: Includes total Scope of Work for all aspects of the project as identified within these bid documents, except any work specifically identified as an Alternate.

Each bidder is responsible for verifying all measurements and dimensions for bidding purposes.

Exception: for certain work which may be concealed from view and/or inaccessible prior to start of construction, unit cost pricing shall be provided on page BP-4.

BASE BID: Provide a complete Security Camera System for the Montgomery County Detention Center. Bid also includes the removal of the existing access control system serving these areas after the new system is tested and approved.

	FIGURES	WORDS
Labor	\$_____	_____
Material	\$_____	_____
Total	\$_____	_____

DEDUCT ALTERNATE 1: Delete cameras, cables, accessories, recording equipment, including installation for all cameras labeled on the drawings as Alternate 1.

	FIGURES	WORDS
Labor	\$_____	_____
Material	\$_____	_____
Total	\$_____	_____

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DEDUCT ALTERNATE 2: Delete cameras, cables, accessories, recording equipment, including installation for all cameras labeled on the drawings as Alternate 2.

	FIGURES	WORDS
Labor	\$_____	_____
Material	\$_____	_____
Total	\$_____	_____

DEDUCT ALTERNATE 3: Delete new monitoring stations including work station, cables, programming, and all associated installation for equipment labeled on the drawings as Alternate 3.

	FIGURES	WORDS
Labor	\$_____	_____
Material	\$_____	_____
Total	\$_____	_____

PRODUCT AND MANUFACTURER SUMMARY

The bidder is required to identify below the system provider intended to be used on this project. Bids which fail to identify the system provider will be considered non-responsive, and may be disqualified. Bidders will not be allowed to change suppliers after bid-opening date, except at the Owner's permission for circumstances as outlined in specification Section 1600.

System Supplier Name:_____

On acceptance of the proposal for said work, the undersigned hereby agrees to enter into a Contract and properly secure the performance of same within ten (10) days after being notified that such Contract is ready for signature, and hereby further agrees to finish and complete said Work within 120 calendar days. If your company is unable to complete this project in the aforementioned time frame, the project will be completed within ____ calendar days.

The undersigned will submit the required Performance Bond in the sum of the full amount of the proposal with surety satisfactory to the Board of County Commissioners, Montgomery County, Ohio, within ten (10) days (not including Sunday and legal holidays) from the date of notification of the award.

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The bidder proposes to take out and maintain Public Liability and Property Damage Insurance, in accordance with the limits stated in the specifications (Instructions to Bidders and General Conditions), and shall submit Certificate at the same time as the Performance Bond.

Following are the names of all persons, firms, and corporations interested in the above bid as principals:

<u>Name</u>	<u>Address</u>
_____	_____
_____	_____
_____	_____

If no person or party is interested, state that "No person or party other than the bidder is interested in this proposal."

Bidder must indicate whether it is an individual _____,
partnership _____, or corporation _____.

If partnership, the members are as follows:

If a corporation, the state of incorporation and address of the home office are as follows:

State: _____

Home Office Address: _____

Dated this _____ day of _____, _____.

Bidder: _____
(Person, Firm, or Corporation)

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By:_____

Title:_____

If a certified cashier's check is submitted with proposal, the amount should not be less than 10% of the bid and made payable to the Auditor of Montgomery County. Please furnish the following information:

_____ Certified Check

_____ Cashier's Check

Amount_____Dollars

on_____Bank

of_____is attached.

Bidder

SECURITY CAMERA SYSTEM UPGRADE AND REPLACEMENT
FOR MONTGOMERY COUNTY DETENTION CENTER

UNIT PRICES

If unforeseen conditions are encountered during construction which make certain changes necessary, or if the Owner shall desire to order additional work or delete part of the Work as shown, the Contractor shall agree to add or delete components at their current GSA pricing schedules.

NO UNIT PRICING REQUESTED.

SECURITY CAMERA SYSTEM UPGRADE AND REPLACEMENT
FOR MONTGOMERY COUNTY DETENTION CENTER

BID GUARANTY
&
PERFORMANCE BOND

"KNOW ALL MEN BY THESE PRESENTS, that we, the undersigned _____
_____ as principal and _____
_____ as sureties, are hereby held and firmly bound
unto the Board of County Commissioners, Montgomery County, Ohio, as obligee in the penal
sum of the dollar amount of the bid submitted by the principal to the obligee on
_____ to undertake the project known as _____.

The penal sum referred to herein shall be the dollar amount of the principal's bid to the obligee,
incorporating any additive or deductive alternative proposals made by the principal on the date
referred to above to the obligee, which are accepted by the obligee. In no case shall the penal
sum exceed the above of _____ dollars.

(If the foregoing blank is not filled in, the penal sum will be the full amount of the principal's
bid, including alternates. Alternately, if the blank is filled in, the amount stated must not be less
than the full amount of the bid including alternates, in dollars and cents. A percentage is not
acceptable.) For the payment of the penal sum well and truly to be made, we hereby jointly and
severally bind ourselves, our heirs, executors, administrators, successors, and assigns.

Signed this _____ day of _____, _____.

THE CONDITION OF THE ABOVE OBLIGATION IS SUCH, that whereas the above
named principal has submitted as bid for _____.

Now, therefore, if the obligee accepts the bid of the principal and the principal fails to enter
into a proper contract in accordance with the bid, plans, details, specifications, and bills of
material; and in the event the principal pays to the obligee the difference not to exceed ten
percent of the penalty hereof between the amount specified in the bid and such larger amount for
which the obligee may in good faith contract with the next lowest bidder to perform the Work
covered by the bid; and in the event the obligee does not award the contract to the next lowest
bidder and resubmits the project for bidding, the principal pays to the obligee the difference not
to exceed ten percent of the penalty hereof between the amount specified in the bid, or the costs,
in connection with the resubmission, or printing new contract documents, required advertising,
and printing and mailing notices to prospective bidders, whichever is less, then this obligation
shall be null and void, otherwise to remain in full force and effect; if the obligee accepts the bid

SECURITY CAMERA SYSTEM UPGRADE AND REPLACEMENT
FOR MONTGOMERY COUNTY DETENTION CENTER

of the principal and the principal within ten days after the awarding of the contract enters into a proper contract in accordance with the bid, plans, details, specifications, and bills of material, which said contract is made a part of this bond the same as though set forth herein;

Now, also, if the said _____ shall well and faithfully do and perform the things agreed by the Board of County Commissioners, Montgomery County, Ohio to be done and performed according to the terms of said contract; and shall pay all lawful claims of subcontractors, materialmen, and laborers, for labor performed and materials furnished in the carrying forward, performing, or completing of said contract; we agreeing and assenting that this undertaking shall be for the benefit of any materialman or laborer having a just claim, as well as for the obligee herein; then this obligation shall be void; otherwise the same shall remain in full force and effect; it being expressly understood and agreed that the liability of the surety for any and all claims hereunder shall in no event exceed the penal amount of this obligation as herein stated.

The said surety hereby stipulates and agrees that no modifications, omissions, or additions, in or to the terms of the said contract or in or to the plans or specifications therefore shall in any wise affect the obligations of said surety on its bond."

PRINCIPAL:

BY:_____

TITLE:_____

SURETY:_____

BY:_____

Attorney-in-Fact

**FACSIMILE COPIES OF OR FAILURE
BY ANY PARTY TO SIGN BID GUARANTY
AND CONTRACT BOND SHALL RESULT IN
REJECTION OF BID**

SURETY COMPANY ADDRESS:

Street

City

State

Zip

(Area Code)

Telephone

Fax

SURETY AGENT'S ADDRESS:

Agency Name

Street

City

State

Zip

(Area Code)

Telephone

Fax

SECURITY CAMERA SYSTEM UPGRADE AND REPLACEMENT
FOR MONTGOMERY COUNTY DETENTION CENTER

JUSTIFICATION OF SURETIES

(Instruction - each individual offering himself as a surety on the _____ Bond shall execute one of the Affidavits.)
(Bid Guaranty and/or Performance)

STATE OF OHIO ss:
MONTGOMERY COUNTY

I, _____, being first duly sworn, depose and say that I reside
at _____ and am a freeholder in
Montgomery County, Ohio, and that I own property in my own name and right, the net worth of which,
over and above all my debts, liabilities and obligations, including all amounts whereon I am a surety, and
over and above all my property which is exempt by law from execution, is not less than

_____ dollars.

Subscribed and sworn this _____ day of _____, _____.

Notary Public in and for Montgomery County, Ohio

STATE OF OHIO ss:
MONTGOMERY COUNTY

I, _____, being first duly sworn, depose and say that I reside
at _____ and am a freeholder in
Montgomery County, Ohio, and that I own property in my own name and right, the net worth of which,
over and above all my debts, liabilities and obligations, including all amounts whereon I am a surety, and
over and above all my property which is exempt by law from execution, is not less than

_____ dollars.

Subscribed and sworn this _____ day of _____, _____.

Notary Public in and for Montgomery County, Ohio

SECURITY CAMERA SYSTEM UPGRADE AND REPLACEMENT
FOR MONTGOMERY COUNTY DETENTION CENTER

NON-COLLUSION AFFIDAVIT

STATE OF _____

:SS

COUNTY OF _____

The undersigned bidder or agent, being duly sworn, on oath says that he has not, nor has any other member, representative, or agent of the firm, company, corporation or partnership represented by him, entered into any combination, collusion or agreement with any person relative to the price to be bid by anyone at such letting, nor to prevent any person from bidding nor to induce anyone to refrain from bidding, and that this bid is made without reference to any other bid and without any agreement, understanding or combination with any other person in reference to such bidding in any way or manner whatever.

Bidder of Agent

For _____
Firm or Corporation

Subscribed and sworn to before me this _____ day of _____, _____.

My Commission Expires

STATE OF OHIO:

COUNTY OF _____:

SECURITY CAMERA SYSTEM UPGRADE AND REPLACEMENT
FOR MONTGOMERY COUNTY DETENTION CENTER

To the Auditor of Montgomery County:

The affiant, _____
(name of person, organization, or company)

located at _____
(address)

After being duly sworn, states the following: The affiant, at the time the bid for:

was submitted (check one)

- ☐ Was not charged with any delinquent personal property taxes on the general tax list of Montgomery County, Ohio
- ☐ Was charged with delinquent personal property taxes on the general tax list of Montgomery County, Ohio, in the principal amount of \$_____ with the sum of \$_____ added for due and unpaid penalties and interest

Further the affiant sayeth naught.

Sworn to and subscribed by _____
(name of person, organization, or company)

this _____ day of _____, _____.

Signature of person or authorized
representative of affiant

STATE OF OHIO:
COUNTY OF _____:

Before me, a Notary Public, on this _____ day of _____, _____, personally

appeared

the affiant in the foregoing affidavit, who acknowledged the signing thereof to be _____ voluntary act and deed.

In testimony whereof, I have hereto subscribed my name and affixed my seal on this day and year aforesaid.

Notary Public

SECURITY CAMERA SYSTEM UPGRADE AND REPLACEMENT
FOR MONTGOMERY COUNTY DETENTION CENTER

DISCLOSURE POLICY

The Board of County Commissioners of Montgomery County, Ohio, has adopted a disclosure policy which requires persons or business contracting with the Board of County Commissioners of Montgomery County, Ohio, to disclose to the Board any business and/or family relationship which the contracting party has with any public official, or person employed by any public official in Montgomery County, Ohio. Immediate family relationships, for disclosure purposes, is defined as **spouse; children; parents** (natural and by law); and **siblings** (natural and by law). Disclosure of this information will not necessarily preclude the award of a contract to the undersigned. The undersigned party, in accordance with intent of Resolution No. 88-1279 agrees to disclose, to the best of its knowledge and ability, the following information.

CORPORATION

The identity of any county official, county employee, or member of a county official's or county employee's immediate family, who hold(s) a position of responsibility being defined as position having decision-making capacities including, but not limited to, a member of the board of directors, officer of the corporation, or trustee;

PARTNERSHIP

The identification of person(s) employed by the partnership and or the name(s) of any of the immediate family who is, or who are, also simultaneously employed by any public official of Montgomery County, Ohio, or public office or agency of Montgomery County, Ohio;

CONSULTANT

The identification of person(s) employed by the consultant and or name(s) of the consultant's immediate family who is, or who are, also simultaneously employed by any official of Montgomery County, Ohio, or public office or agency of Montgomery County, Ohio.

Should the undersigned party have knowledge or information concerning the above categories, the undersigned party is to submit this acknowledgment form with a detailed explanation of the names of the parties involved and the particular relationship. Please fill out the appropriate column below.

DOES NOT APPLY

DOES APPLY AND EXPLANATION ATTACHED

SIGNATURE_____SIGNATURE_____

TITLE_____TITLE_____

STATEMENT OF BIDDER'S QUALIFICATIONS

All questions must be answered and the data given must be clear and comprehensive. This statement must be notarized. If necessary, questions may be answered on separate attached sheets. The bidder may submit any additional information he desires.

1. Name of bidder.
2. Permanent main office address.
3. When organized.
4. If a corporation, where incorporated.
5. How many years have you been engaged in construction under your present firm or trade name?
6. Contracts on hand: (Schedule these showing gross amount of each contract and the appropriate anticipated dates of completion.)
7. General character of work performed by you.
8. Have you ever failed to complete any work awarded to you? If so, where and why?
9. Have you ever defaulted on a contract? If so, where and why?
10. List the more important contracts recently completed by you, stating the approximate gross cost per each and the month and year completed.
11. List your major equipment available for this Contract.
12. Experience in construction work similar in importance to this project.
13. Background and experience of the principal members of your organization including the officers.
14. Give bank reference.
15. Will you, upon request, fill out a detailed financial statement and furnish any other information that may be required by Montgomery County, Ohio, and requested by the Director of the Public Works Department.

* * * END OF SECTION * * *

CONSTRUCTION CONTRACT AGREEMENT

THIS AGREEMENT made and entered into at Dayton, Montgomery County, Ohio, on the dates set forth at the end hereof, between the **BOARD OF COUNTY COMMISSIONERS OF MONTGOMERY COUNTY, OHIO**, located at the Montgomery County Administration Building, 451 West Third Street, Dayton, Ohio 45422-1403 (the "Board"), and _____ located at _____ (the "Contractor") for the (the "Project"), briefly described as the **Security Camera System Upgrade and Replacement for Montgomery County Detention Center.**

WITNESSETH:

WHEREAS, The Board desires to secure a contractor to perform the Work as described in Paragraph 4; and

WHEREAS, The Board desires to secure a contractor to perform the Alternates, if any, described in Paragraph 9; and

WHEREAS, The Contractor has been determined to be the lowest bidder to perform the Work; and

WHEREAS, The Board and the Contractor mutually desire to contract with each other to perform the Work; and

WHEREAS, The Contractor is qualified, experienced and willing to perform said Work.

NOW, THEREFORE, For and in consideration of the mutual promises, covenants and agreements hereinafter set forth, the parties to this Agreement, with intent to be legally bound, agree as follows:

1.1 The Contract Documents. The Contract Documents consist of all the following:

- .1 This Construction Contract Agreement between Board and Contractor (hereinafter the Agreement);
- .2 Conditions of the Contract (including the General Conditions, Supplementary and other Conditions);
- .3 Drawings, Plans and Specifications dated 9/16/07 on file in the office of the Montgomery County, Ohio, Department of Public Works and in the Montgomery County, Ohio, Auditor's Office;
- .4 Instructions to Bidders;
- .5 Addenda related to bidding requirements;
- .6 Addenda issued prior to execution of the Agreement;

SECURITY CAMERA SYSTEM UPGRADE AND REPLACEMENT
FOR MONTGOMERY COUNTY DETENTION CENTER

- .7 Statement of Indemnification;
- .8 Wage Determination;
- .9 Workers' Compensation Certificate;
- .10 Certification of Insurance;
- .11 Non-Collusion Affidavit;
- .12 Montgomery County, Ohio, Auditor's Personal Property Tax Form;
- .13 Bid Guaranty and Performance Bond;
- .14 Labor and Material Payment Bond;
- .15 Exemption Certificate;
- .16 Contractor's Bid and Unit Price schedule;
- .17 Any Modifications issued after execution of the Contract; and
- .18 Any other documents listed in the Agreement and in the Conditions of the Contract.

1.2 Unless specifically enumerated in Paragraph 1 or elsewhere in the Agreement, the Contract Documents do not include any other documents (i.e., advertisement or invitations to bid, or sample forms).

2.1 The Contract. The Contract Documents form the Contract for Construction and are as fully a part of the Contract as if attached to this Agreement or repeated herein. The Contract represents the entire and integrated agreement between the parties hereto and supersedes prior negotiations, representations or agreements, either written or oral. The parties hereby agree to be bound to all terms in the Contract. The Contract may be amended or modified only by a Modification.

2.2 Relationship of Parties. The Contract Documents shall not be construed to create a contractual relationship of any kind (1) between the Architect and the Contractor, (2) between the Board and a Subcontractor or Sub-subcontractor, (3) between persons or entities other than the Board and Contractor, their heirs, administrators, assigns, executors, or successors. Nothing in this Agreement is intended to, or shall be deemed to, constitute a partnership, association or joint venture with the Contractor in the conduct of the provisions of this Agreement. The Contractor shall at all times have the status of an independent contractor without the right or authority to impose tort, contractual or any other liability on the Board.

3. Modification. A Modification is (1) a written amendment to the Contract signed by both parties and approved by a Resolution of the Board, (2) a Change Order, (3) a Construction Change Directive, or (4) a written order for a minor change in the work issued by the Engineer which does not affect the Contract Sum.

4. The Work. The term "Work" means the construction services required by the Contract Documents, or reasonably inferable from the Contract Documents as necessary to produce the results intended, whether completed or partially completed, and includes all other labor, materials, equipment and services provided or to be provided by the Contractor to fulfill the Contractor's obligations, except to the extent specifically indicated in the Contract Documents to be the responsibility of others. The Work includes the Alternates, if any, described in Paragraph 9 below. The Work may constitute the whole or a part of the Project. The Work does not include any portion of the Project specifically indicated in the Contract Documents to be the responsibility of others. If applicable, the Work herein refers to the trade or portion of the Project known as the Fire Alarm Installation.

5. The Project. The Project is the total construction of which the Work performed under the Contract Documents may be the whole or a part and which may include construction by the Board or by separate contractors. The Project is also known as follows:

6. The Drawings. The Drawings are the graphic and pictorial portions of the Contract Documents, wherever located and whenever issued, showing the design, location and dimensions of the work, generally including, but not limited to, plans, elevations, sections, details, schedules and diagrams.

7. The Specifications. The Specifications are that portion of the Contract Documents consisting of the written requirements for materials, equipment, construction systems, standards and workmanship for the Work, and performance of related services.

8. The Project Manual. The Project Manual is the volume usually assembled for the Work and/or Project which may include the bidding requirements, sample forms, Conditions of the Contract and Specifications.

9 Alternates. The following Alternates, if any, are hereby accepted by the parties and are in full force and effect as though included in the Contractor's base bid: _____

Alternates are a part of the Work. Refer to the applicable sections of the Specifications and the Contract Documents for the specific requirements of Work to be performed as "Alternates."

10. The Board. The Board refers to the Board of County Commissioners for Montgomery County, Ohio, or to the Board's Authorized Representative. In the event the Board fails to expressly

authorize a representative, the Director of the Montgomery County Public Works Department or said Director's representative, duly appointed by said Director, shall serve as said Authorized Representative of the Board until such time as the Board revokes said authorization in writing. The Montgomery County Administrator may, at all times relevant hereto, sign any and all documents, Contract Documents and/or notices relevant hereto on behalf of and with the authorization of the Board until such time as the Board revokes said authorization in writing. All Resolutions required herein must be passed by the Board of County Commissioners for Montgomery County, Ohio.

11.1 The Contractor. The Contractor is the person or entity identified as such at the top of this Agreement and is referred to throughout the Contract Documents as if singular in number. The term Contractor means the Contractor or Contractor's authorized representative.

11.2 The Coordinating Contractor. The Coordinating Contractor means the separate contractor who shall be responsible for coordinating the work of the various separate contractors on the Project, whether or not such other separate contractors are hired by the Coordinating Contractor. For this Project, the Coordinating Contractor shall be the separate contractor awarded the trade or portion of the Project. Where there is no Coordinating Contractor, the responsibilities of the Coordinating Contractor shall be fulfilled by the separate contractor whose trade or portion of the Project has been assigned the highest cost estimate by the Engineer before bids are opened. Where there is only one contractor for the Project, the Contractor shall fulfill the responsibilities of the Coordinating Contractor.

12.1 The Engineer. The person or entity referred to throughout the Contract Documents as the Engineer is identified as Helmig Lienesch LLC, located at 410 S. Jefferson Street, Dayton, Ohio 45402, phone 937-228-4007, and referred to throughout the Contract Documents as if singular in number. If no Engineer is listed above, the Engineer shall be the Board. The term "Engineer" means the Engineer or the Engineer's authorized representative. Use of the term "Engineer" does not necessarily mean that the person referred to as such is a licensed Engineer, as the Engineer may be a licensed engineer, a consultant, or the Board.

12.2 In case of termination of employment of the Engineer, the Board shall appoint an Engineer whose status under the Contract Documents shall be that of the former Engineer. In the event no Engineer is appointed upon such termination, the Engineer shall be the Board.

13. Contract Time. Unless otherwise provided, Contract Time is the period of time, including authorized adjustments, allotted in the Contract Documents for Substantial Completion of the Work.

14. Commencement of the Work. The date of commencement of the Work is the date from which the Contract Time in Paragraph 13 is measured and shall be the date of this Agreement, as stated below, unless a different date is agreed upon in writing or provision is made for the date to be fixed in a notice to proceed issued by the Board. The date shall not be postponed by the failure to act of the Contractor or of persons or entities for whom the Contractor is responsible.

15. Day. The term "day" as used in the Contract Documents shall mean calendar day unless otherwise specifically defined.

16. Term. The Contractor shall achieve Substantial Completion of the entire Work not later than _____, subject to adjustments of this Contract Time as provided in the Contract Documents.

17.1 Contract Sum. The Board shall pay the Contractor in current funds, for the Contractor's performance of the Contract, an amount not to exceed the Contract Sum of _____ and /100 Dollars (\$ _____), subject to additions and deductions as provided in the Contract Documents.

17.2 The Contract Sum, including authorized adjustments, is the maximum total amount payable by the Board to the Contractor for performance of the Work under the Contract Documents. Any upward change or other upward adjustment or increase in the Contract Sum must be approved by way of Resolution by the Board in order to be valid. The Contract Sum is based upon the Work plus the Alternates referred to in Paragraph 9, if any, which are described in the Contract Documents and which are hereby accepted by the Board.

18. Unit Prices. Unit prices, if any, are attached with Contractor's bid. The unit prices shall determine the value of extra Work or changes in the Work, as applicable. They shall be considered complete and shall include all material and equipment, labor, installation costs, overhead and profit. In no event shall the combined overhead and profit reflected in any unit price exceed fifteen percent (15%) of the cost of that unit. All labor prices shall be in accordance with the prevailing wages as stated in the Contract Documents. Unit prices shall be used uniformly for additions and deductions.

19. Liquidated Damages. Time is of the essence to the Contract Documents and all obligations thereunder. Contractor agrees and acknowledges that (1) Board is entitled to full and beneficial occupancy and use of the completed Work upon expiration of the Contract Time and (2) Board has or will enter into contracts, agreements and commitments based upon Contractor achieving Substantial Completion of the Work within the Contract Time. Contractor further agrees that if Contractor fails to cause substantial Completion of the Work or any portion of the Work within the Contract Time, the Board will sustain extensive damages and loss as a result of such failure, the exact amount of which will be extremely difficult to ascertain. Therefore, the Board and Contractor agree as follows:

If Contractor fails to achieve Substantial Completion of the Work within the Contract Time and as otherwise required by the Contract Documents, the Board shall be entitled to retain or recover from the Contractor, as liquidated damages, and not as a penalty, the following per diem amounts commencing upon the first day following expiration of the Contract Time and continuing until the actual Date of Substantial Completion. Such liquidated damages are hereby agreed to be a reasonable pre-estimate of damages the Board will incur as a result of delayed completion of the Work: Two Hundred Twenty-Five and /100 Dollars (\$225.00) per day.

20. Governing Law. This Agreement, the Contract Documents and any modifications, amendments, or other alterations shall be governed, construed and enforced under the laws of the state of Ohio.

21. Successors and Assigns. The Board and Contractor respectively bind themselves, their partners, successors, assigns, employees, agents, subcontractors, sub-subcontractors and legal representatives to the other party hereto and to partners, successors, assigns, employees, agents, subcontractors, sub-subcontractors and legal representatives of such other party in respect to rights, remedies, covenants, agreements, duties and obligations contained in the Contract Documents. Neither party to the Contract shall assign the Contract without written consent of the other. If either party attempts to make such an assignment without such consent, that party shall nevertheless remain legally responsible for all obligations under the Contract.

22. Headings. The use of numbered topical headings, articles, paragraphs, subparagraphs or titles in this Agreement are inserted for the convenience of organization and reference and are not intended to affect the interpretation or construction of this Agreement.

23. Authority to Bind Principal. Signatures hereon shall act as express representations that the signing agents are authorized to bind their respective principals to all rights, duties, remedies, obligations and responsibilities incurred by way of this Agreement.

24. Signature and Acceptance of Offer. Signatures hereon shall act as an express representation that the Contractor has agreed that it must return this signed agreement to the Montgomery County Public Works Department, within ten (10) days of receipt for signature or the offer to enter into this Agreement may be cancelled and voided by the Board.

25. Approval. This Agreement is subject to the written approval of the Board by Resolution and to Certification by the Auditor of Montgomery County, Ohio, and shall not be binding until such approval and certification.

SECURITY CAMERA SYSTEM UPGRADE AND REPLACEMENT
FOR MONTGOMERY COUNTY DETENTION CENTER

*(Continuation of Construction Contract Agreement with _____, for
Security Camera System Upgrade and Replacement for Montgomery County Detention Center)*

IN WITNESS WHEREOF, the parties have hereunto set their hands this _____ day of
_____, _____.

Signed and acknowledged
in the presence of:

BOARD OF COUNTY COMMISSIONERS OF
MONTGOMERY COUNTY, OHIO (Board)

Witness By: _____
Dan Foley, Commissioner

Witness By: _____
Deborah A. Lieberman, Commissioner

Witness By: _____
Judy Dodge, Commissioner

OR

Witness By: _____
Deborah A. Feldman, Administrator

Witness _____ (Contractor)

Witness By: (Sign) _____
(Print) _____

Witness Title: _____
Date: _____

CERTIFIED PURSUANT TO O.R.C.

153.44:

**MATHIAS H. HECK, JR.
PROSECUTING ATTORNEY
MONTGOMERY COUNTY, OHIO**

By:

Walter F. Ruf

Assistant Prosecuting Attorney

Date:

STATEMENT OF INDEMNIFICATION

The Contractor hereby agrees to assume all risk of injuries to property or persons, including death resulting therefrom, arising from the performance of the Work under this Contract, or in connection therewith, or appertaining thereto, sustained by the Contractor, the employees of the Contractor, the employees of the Board and/or any other person. The Contractor does hereby agree to protect, indemnify, and hold harmless the Board of County Commissioners against any and all actions, claims, demands or liabilities for death, personal injuries or property damage arising from the performance of the Work under this Contract by any person as aforesaid for any cause whatsoever, not including, however, any act of negligence or omission by the Board or its authorized representatives and employees, and any defect in the premises, machinery or equipment of the Board. In addition, the Contractor shall pay all expenses which the "Board" may incur in the investigation and/or defense of any such claim, including counsel fees and court costs.

CONTRACTOR

By _____

Title _____

Date _____

Subscribed and sworn to before me this:

_____ day of _____, _____

Notary Public: _____

My Commission Expires: _____

SECURITY CAMERA SYSTEM UPGRADE AND REPLACEMENT
FOR MONTGOMERY COUNTY DETENTION CENTER

EXEMPTION CERTIFICATE (Construction Contract)

Divided Contract Amount:
Tangible personal
property _____

Identification of Contract as will
appear on orders to be exempted:
Contract/Resolution No. _____

b. Labor, etc. _____ Dated _____

c. Total _____ Work to be completed _____

The undersigned hereby certifies that the articles of tangible personal property purchased under this certificate were purchased for incorporation into:

() A structure or improvement to real property under a construction contract with the state of Ohio or a political subdivision thereof.

() A house of public worship or religious education. A building used exclusively for charitable purposes under a construction contract with a nonprofit organization operated exclusively for the relief of poverty, the improvement of health through the alleviation of illness, disease or injury, or the promotion of education by an institution of learning which maintains a faculty of qualified instructors, teaches regular continuous courses of study and confers a recognized diploma upon completion of a specific curriculum.

() A structure or improvement to real property which is accepted for ownership by this state or any of its political subdivisions at the time of completion of such structures or improvements.

This certificate shall be considered a part of each order for the specific contract identified above and shall be retained by the vendor. The certificate must be signed by both the Contractor and the contractee.

Contractor: _____

Contractee: Montgomery County, Ohio, Board
of County Commissioners

By: _____ By: _____

Title: _____ By: _____

Date: _____ By: _____

OR

By: _____

Deborah A. Feldman
Administrator, Montgomery County, Ohio

Subcontractor: _____

By: _____

Name of political subdivision
if improvement to be accepted
by one: Montgomery County, Ohio

Title: _____

Address: _____

Date: _____

SECURITY CAMERA SYSTEM UPGRADES AND REPLACEMENTS
FOR MONTGOMERY COUNTY DETENTION CENTER

ELECTRICAL

DIVISION 16000

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ELECTRICAL

SECTION 16000

1. NOTE

- A. The Drawings and General Conditions of the Contract as well as Division 1 - General Specifications apply in the work covered under this section.

2. SCOPE

- A. The work included under this section shall consist of the furnishing of all labor, materials, equipment and incidentals necessary to perform the electrical and related work indicated on the drawings and as called out in the following technical specifications. This shall include all testing and adjustments required and/or specified.

3. DESCRIPTION OF WORK

- A. The following is a summary of the principal categories of work under this section. Note, however, that this listing is for general information only and work will not necessarily be limited to these categories. The detailed drawings and the following specifications cover the full extent of the work.
- B. Surveillance System:
 - 1. Additions and/or revisions to the existing Jail Surveillance system as indicated on the drawings.
- C. Demolition:
 - 1. Demolition and salvage of existing devices, systems, fixtures, etc.
 - 2. Removal of existing electrical devices that are noted on drawings and those devices in the area of the remodeling that are obviously necessary to be removed.

4. PERMITS, FEES, INSPECTIONS, LAWS & REGULATIONS

- A. Obtain and pay for all permits required in connection with this section of the work. In addition, pay all necessary inspection fees or similar charges. Laws and regulations which bear upon or affect this work shall be complied with and are hereby made a part of this section of the work. All work which such laws require to be inspected shall be submitted to the proper public officials for inspection.
- B. The requirements of the National Electrical Code (NEC), NFPA, as well as all local ordinances and regulations, including those of the local utility company, shall be followed and adhered to with regard to the work under this section. Where the contract documents (plans, specifications, etc.) exceed the minimum requirements of the NEC and/or other regulations, etc., the document requirements shall govern.

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- C. At completion of the project furnish to the Owner, at no additional charge, a certificate(s) of inspection issued by the authorized agency (or agencies) having jurisdiction over this portion of the project, stating that all work executed under this section complies with the minimum requirements.
- D. Additional fees, charges, etc. imposed by other contractors and/or tradesmen, professional consultants, etc. for services rendered in connection with performing any portion of the work under this section shall be included as part of the work. This shall include surveys, profiles and/or other miscellaneous drawings, etc. that may be required in addition to the contract documents by any governing authority.

5. SITE INVESTIGATION

- A. Prior to bidding, it is recommended that the contractor visit the job site and investigate all details which may have any effect on the installation, progress or completion of the project.
- B. When a bid is received, it will be assumed that the contractor has made the job site visit(s) and is familiar with the conditions as they exist and any adjustments and/or modifications that may be necessary in order to perform and complete the work as specified.
- C. At project start-up, certain areas will be designated for the storage of materials and equipment and cooperation with the Owner in minimizing interference with existing operations will be mandatory.

6. DRAWINGS

- A. The drawings prepared for this project are an outline to show where conduit, devices and equipment must go in order to harmonize with the building. All work must be installed in accordance with the drawings insofar as possible. All drawings shall be carefully checked during the course of bidding and construction. If any discrepancies, errors or omissions are discovered prior to or during the construction phase, notify the Engineer immediately for interpretation or correction. Note that an overlap with another trade does not relieve the contractor from the obligation of performing the work indicated on the drawings for this section of the project unless written notification stating such is obtained from the Engineer.
- B. Take all necessary measurements and be responsible for same, including clearances for all equipment that is to be furnished. The Engineer shall reserve the right to make minor location changes of equipment where such adjustments are deemed desirable from an appearance, installation or operational standpoint. Such changes will normally be initiated sufficiently in advance to avoid extra work or unduly delay progress on the project.
- C. In general, the conduit and wiring layouts shall be considered as diagrammatic for clearness and legibility and are to be used as a guide. Therefore, it is not intended that the drawings indicate all necessary offsets, junction boxes, pull boxes, etc. Conduit, wiring, fixtures, devices, equipment, etc. may have to be offset, lowered or raised as required or as directed at the site in order to accommodate field conditions. In addition, relocate or shift equipment, fixtures and devices without cost, when so directed by the Engineer, providing such items

have not been installed and the revised location is not greater than 10 feet from the location indicated.

- D. Note also that electrical connections indicated on the drawings may not be shown in the correct location for the equipment, fixtures, devices, etc., actually selected for the project. Verify all connection locations with shop drawings of the item to be installed or make field measurements before proceeding with any rough-in work.
- E. The general building and/or structural drawings shall be used to obtain dimensions and exact locations and as a check with other contractors to avoid interference with their work. Refer to applicable drawings on all branches of the work where other trades are involved on the project so that added field work and/or job delays resulting from conflicts between crafts can be avoided.

7. SPECIFICATIONS

- A. Specifications shall be interpreted in conjunction with the drawings hereinbefore described and if anything is shown on the drawings and not mentioned in the specifications or vice versa, it is to be included in the work the same as though clearly set forth by both.
- B. Furthermore, all materials or labor obviously required to fully complete the work shall be included in the bid, even though each item necessarily involved is not specifically mentioned or shown. Such work and/or material shall be furnished and shall be of the same grade or quality as the parts actually specified and shown. Should there be a conflict between the plans and specifications, the greater quantity or better quality shall be furnished.
- C. Should an overlap of work between the various trades become evident, the Engineer shall be notified. Such an event shall not relieve any trade of the responsibility for the work called for under his branch of the specifications until a written clarification or directive is issued concerning the matter.
- D. When selecting equipment to be used on this project, refer to Item EQUIPMENT CLEARANCES AND REQUIREMENTS in these specifications.
- E. Note that all systems and items of equipment involved under this contract heading shall be furnished and installed in accordance with applicable requirements of federal, state and local codes including the ADA (Americans with Disabilities Act), OSHA requirements and applicable portions of NFPA. The above includes adhering to applicable requirements governing mounting heights for occupant operable controls.
- F. All references made to codes, standards, etc. in these specifications or on the drawings shall be taken to mean the latest edition, amendment and/or revision of such reference in effect as of the date indicated on the Bid Documents.

8. MATERIALS AND WORKMANSHIP

- A. Materials supplied under this contract shall be new and in strict accordance with the provisions of these plans and specifications. Any material required which is not specifically represented by a manufacturer's catalog number of quality standard, shall be subject to the approval of the Architect/Engineer in all cases.

When two or more items of the same equipment are involved, they shall be identical in quality and made by the same manufacturer.

- B. Materials shall be the latest design of that manufacturer and shall be shipped to the job in the original container with proper identification as to size, type and dates of inspection and shipment.
- C. Electrical work shall be performed by mechanics skilled in their respective trades. Tool marks will not be permitted on any exposed materials, fixture or fitting. In addition, all exposed materials, fixtures, equipment, etc. shall be installed in straight horizontal and/or vertical lines, parallel to the building lines wherever possible. Carelessly executed work as well as workmanship that is determined to be below normal industry standards of best practice, and/or work not conforming to the requirements of this item, shall be redone or repaired as required prior to final acceptance.

9. CUTTING AND PATCHING

- A. All cutting and/or drilling of walls, slabs, structural members, etc., required in conjunction with work under this section shall be performed as part of the work. Work shall be neatly done, without unnecessary removal of material. Holes, openings, etc. shall be located where they will not weaken the structure. No beams, joists, etc., shall be cut without written authorization.
- B. Cutting of holes in masonry and/or concrete shall be performed with a core drill to minimize spalling, etc. Locations shall be accurately determined and checked and the appropriate drill bit shall be used to minimize hole size.
- C. Sleeves or thimbles for these holes as well as escutcheons and trim plates shall be provided as described in Item INSERTS, PENETRATIONS AND SLEEVES.
- D. NOTE: Cutting of water lines, electric conduit or similar service lines in the course of work performed under this section shall be immediately repaired as part of the work of this section.
- E. Patching and/or repairing of all work, including finished surfaces, necessitated by the demolition or installation of work under this section shall be considered as part of this work. It shall, however, be performed by mechanics of the appropriate trade in order to achieve a workmanlike job. This shall include, but not be limited to, all items of concrete and masonry work, millwork, gypsum board and/or plaster work, painting, floor finishes and ceiling finishes as well as all other surface finishes.

10. PROTECTION

- A. Provide proper protection to the building during the execution of all work involved under this contract heading.
- B. This protection shall include covering all apparatus, building surfaces and/or other materials to protect same from dirt; adequate temporary connections to protect apparatus from damage of any sort; and required shielding to protect finished parts of the building. The following shall apply where applicable:
 - 1. Protect finished floors from chips and cutting oil by the use of a metal chip receiving pan and an oil proof floor cover.

2. Protect equipment and finished surfaces.
3. Protect all electrical equipment.
4. Exercise extreme caution in the handling and storage of tools, material and equipment.

11. PREPARATION OF BIDS

- A. All bids shall be based upon furnishing and installing the make of materials and apparatus specified herein WITHOUT SUBSTITUTION, in order that all bids may be properly compared.

12. SHOP DRAWINGS

- A. Prepare or obtain from the manufacturer, certified shop or erection drawings of all items of equipment to be furnished under this section and submit copies of same as required for review. This shall be done as soon as possible, well prior to proceeding with installation or construction and in the proper sequence to avoid delays in the work, the work of the Owner or other contractors. Unless otherwise indicated, a minimum of six (6) sets shall be submitted. These drawings shall be complete in every respect, showing pertinent details regarding size, external and internal features, mechanical and/or electrical arrangements, locations of connections, installation and mounting instructions, materials, gauges, electrical characteristics, wiring diagrams, and other information necessary to show compliance with the intent of the contract documents. Note that in the following items of this specification, where more than one equipment manufacturer is listed, the first named has been used as the basis for design. All departures or deviations in performance, service requirements, size, etc. from first named by the make submitted shall be noted on the shop drawings. Where departures or deviations do occur, the contractor shall additionally itemize same on the cover sheet that accompanies the submittals. Failure to do so will risk subsequent rejection at the job site. (With regard to voluntary substitutions, refer also to Item BIDDING in this specification and item EQUIPMENT CLEARANCES AND REQUIREMENTS.
- B. By submitting such drawings, the Contractor represents that he has selected and verified the materials and equipment, taken necessary field measurements, noted field construction criteria, etc., related thereto, or will do so, and has checked and coordinated the information contained within such submittals with the requirements of the Work and the Contract Documents.
- C. Materials and equipment to be furnished for this project shall be of current production by manufacturers regularly engaged in the manufacture of such items. When two or more similar units are required, they shall be the product of one manufacturer.
- D. The review of shop drawings shall not be construed as a complete check but will indicate only that the capacity, general method of construction and/or detailing is satisfactory. Carefully check and verify dimensions for installation and service requirements before ordering equipment for the project.

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- E. Submittals shall be itemized on a standardized shop drawing submittal form stating the name of the project, specification section, paragraph and/or drawing numbers applicable to submittal and shall bear the contractor's review stamp as evidence that the items have been initially checked for compliance with Contract Documents as stated above.
- F. After review, shop drawings will be returned marked in one of the following ways:
 - 1. "NO EXCEPTIONS NOTED" - Copies may be distributed as required for construction, shipment, etc. to proceed.
 - 2. "EXCEPTIONS NOTED" - Contractor may proceed with and/or authorize construction, shipment, etc. taking into account the necessary corrections.
 - 3. "EXCEPTIONS NOTED - REVISE AND RESUBMIT" - Contractor will be required to resubmit shop drawings in their entirety. No fabrication, erection or installation shall be authorized or initiated until shop drawings so marked have been completely revised, resubmitted and subsequently marked in accordance with either of the two preceding subparagraphs. Only shop drawings officially marked "NO EXCEPTIONS NOTED" or "EXCEPTIONS NOTED" will be permitted on the jobsite.
- G. Upon return of submittals take appropriate action as specified above. Note that any shop drawing copies received beyond the number required will be destroyed (not returned). Also note that if an insufficient number of copies has been submitted, no review will take place until all required copies have been received.
- H. Where resubmittal is required, four (4) copies will be so noted by the reviewer, of which two (2) copies will be returned for corrections (one (1) copy for the contractor and one (1) copy for the supplier/subcontractor).
- I. The following is a list, where applicable, of items requiring submittals.
 - 1. Panelboards
 - 2. Lighting fixtures, Lamps, and Ballasts
 - 3. Wiring Devices and Cover Plates
 - 4. Battery Powered Emergency Lighting Units
 - 5. Fire Alarm and Detection System
- J. Note that submittal review is for general construction, detailing and application only. Carefully check and verify dimensions for installation, clearance and service requirements before ordering equipment for the project. At completion the subsequent installation shall be such that all equipment will function and be serviceable in a normal and satisfactory manner.
- K. Shop drawings will be provided by the Owner for any Owner furnished equipment requiring service or connections under this section.
- L. A complete set of shop drawings, officially marked in the prescribed manner noted previously, shall be filed on the job site. Such drawings shall be kept together, maintained in good condition and shall be readily available for reference.

13. SUPPORTING MEMBERS

- A. Furnish and install all steel angles, channels, bars or clamps required to support any type of permanent apparatus to be furnished and/or installed under this section.

14. CLEAN UP

- A. All rubbish resulting from the work herein specified shall be removed from the premises as fast as it accumulates.
- B. Upon completion of the work, remove from the project site all tools, equipment, surplus materials and rubbish pertaining to the work under this contract heading. Responsibility for this shall include paying all costs for such removal and disposition including hauling, dumping, proper and legal disposal of hazardous materials, etc.

15. MAINTENANCE OF EXISTING FACILITIES

- A. Prior to the severing of the electrical service to any portion of the existing building, submit a plan to the Architect and the Owner's Representative, stating the nature and duration of the proposed interruption, as well as the method of procedure. Do not under any circumstances proceed with an interruption of service of any type without the Owner's written authorization.

16. WORK IN EXISTING BUILDING

- A. All electrical items shown dotted and associated wiring and conduit, etc., located in the remodeled portions of the existing building shall be disconnected and removed and covered with a stainless steel plate as directed by the Engineer.
- B. All cutting and patching of existing walls, floors and ceilings required for the installation of any and all electrical work in the existing building shall be done under this section. (See Item CUTTING AND PATCHING).
- C. All electrical work to be installed in finished rooms of the existing building shall be installed concealed unless otherwise noted on the drawings.

17. RECORD DRAWINGS

- A. Provide and keep on the job site two complete print sets of the contract working drawings on which shall be legibly recorded any variations or alterations from such contract drawings made during construction. Record prints shall show location of all piping system drains as well as changes in:
 - 1. Size, type, capacity, etc., of any material, device or item of equipment...
 - 2. Location of devices or equipment...
 - 3. Location of outlet or source in building service systems...
 - 4. Routing of building services...
 - 5. Schedule data...

6. Circuit numbering...

- B. These prints shall indicate the location of all concealed water and electric services, water piping, vents and other miscellaneous piping and services, by field measured dimensions from readily identifiable and accessible walls, columns, or corners of the building. The record set shall also include the updating of equipment schedule sheets.
- C. During the course of the project these prints shall be updated weekly and kept clean and undamaged. They shall not be used for any purpose other than as described above and shall be available at all times for inspection.
- D. When the job is completed, these prints shall be submitted to the Engineer for review and analysis before electronic updating is performed by the Engineer's office.

18. INSTRUCTIONS AND MANUALS

- A. Provide four complete brochures in hard backed binders, each containing all operating, servicing, and maintenance information as well as parts lists for all equipment installed under this contract. Where diagrams are too large for the binder, arrange manila pockets with reinforced holes to hold folded drawings. The binder shall also contain a title sheet showing the Contractor's name and address and an index sheet listing the contents of the manual. A copy shall be submitted to the Engineer for verification prior to being submitted to the Owner.
- B. Information shall be complete, indexed, and bound as described above. The following shall be clearly printed on the front cover of the binder:
 - 1. Project name, address and date.
 - 2. Name and address of Architect-Engineer.
 - 3. Section of Work covered, i.e., Electrical
 - 4. Name and address of Contractor.
 - 5. Telephone number of Contractor, including night or emergency numbers.
- C. Incorporate, within the binders, individual sections containing an index sheet, written operating instructions, shop drawings, equipment catalog cuts, manufacturer's instructions, and a list of equipment into the binders.
 - 1. First Page - Title of Job, Owner, Address, Date of Submittal, Name of Contractor and Name of Architect-Engineer...Emergency operating instructions and/or list of service organizations (including address and telephone numbers) capable of rendering emergency service on 24 hour calls shall be furnished.
 - 2. Second Page - Index/Table of Contents
 - 3. Third Page - Introduction to First Section...This shall contain a complete written description of the system.

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4. First Section: A written description of system contents, where the system is actually located in the building, how each part functions individually and how the system works as a whole...Conclude with a list of the items requiring service and either state the service and frequency needed or refer to the manufacturer's data in the binder that describes the proper service.
 5. Second Section: A copy of each approved shop drawing, (clearly marked to identify the item furnished) with an index at the beginning of the section...Provide a separate list of all lighting fixtures and luminaires used on the job. The list shall include but not be limited to fixture type, manufacturer's catalog number and voltage, number of lamps, lamp type, ballast catalog number, manufacturer's name and quantity when required, catalog number and quantity of any replacement glass and/or plastic parts.
 6. Third Section: A copy of each manufacturer's operating instructions with an index at the beginning of the section.
 7. Fourth Section: A list of all equipment used on the job, Contractor's purchase order numbers, supplier's name and address.
- D. Arrange for technical instruction of the Owner's maintenance personnel for such time as would be reasonably required to acquaint them with their duties. In addition, deliver to the Owner all special tools or equipment required for making normal adjustments on any equipment or apparatus furnished under this contract heading.
- E. Technical instructions involving installed equipment shall include a demonstration of the equipment and/or the operating system(s) with a description of the operation explained to the owner's representatives. It shall be this Contractor's responsibility to arrange this demonstration with the Owner as well as representatives of suppliers. The demonstration shall take place after all testing and balancing and written reports of such work have been submitted to and accepted by the Architect/Engineer. The time when the satisfactory completion of this technical instruction and demonstration takes place will establish the date of final acceptance of the system and/or project unless otherwise stipulated.

19. EQUIPMENT CLEARANCES AND REQUIREMENTS

- A. For items of equipment described in these drawings and specifications several manufacturers are listed. The first named in each instance is the make on which the layout was based and on which clearances, service requirements, and electrical characteristics, etc. have been checked.
- B. Due to the possibility of restrictions imposed by space limitations, the responsibility for resolving conflicts resulting from the use of equipment other than first named or of alternate equipment shall rest with the equipment supplier and the Contractor. Submittals for this equipment will be considered as a statement that clearances for access, service, maintenance, etc. have been checked and found adequate.

20. CONTRACTORS' FOREMAN

- A. With reference to the work under this section, a competent foreman shall be assigned to the project. The foreman shall remain on the job during all normal

working hours until the project is complete and shall be authorized to act as the Contractor's agent in the absence of said Contractor. This foreman shall not be relieved of his duties on the project except by permission or by request of the Engineer.

21. WARRANTIES

- A. Provide warranties to the Owner that the materials and equipment furnished are new, unless otherwise specified, and that all work is of good quality, free from faults and defects and in conformance with the Contract Documents. Unless otherwise specified, all warrants shall extend for a period of 12 months or greater as noted below. However, latent defects in materials, equipment or workmanship that are not discovered until sometime during the second year following acceptance, shall remain the contractor's responsibility to correct.
- B. Warranties on all work and equipment shall commence on the date of substantial completion of the work or designated portion thereof unless otherwise provided in the Certificate of Substantial Completion. These warranties and all related documents shall be presented in writing prior to the issuance of any Certificates. Warranties shall include equipment manufacturer's written certificates warranting the equipment furnished complies with all requirements of the drawings and specifications. This documentation shall be submitted in an appropriately marked, 3-ring hard cover binder.
- C. If, within one year after the date of substantial completion of the work or within one year after acceptance by the Owner or within such longer period of time as noted above or as may be prescribed by the terms of any applicable special warranty stipulated in the Contract Documents, any portion of the work is found to be defective, functioning improperly, or not in accordance with the Contract Documents, it shall be promptly corrected upon receipt of official notification to do so. This obligation shall survive termination of the contract.

22. PAINTING

- A. The following items of painting work shall be included in this Section:
 - 1. Electrical equipment which has been factory finished but where the finish has become marred or rusted, shall be sanded and refinished equal to the original factory finish.

23. HOISTS, RIGGING, TRANSPORTATION AND SCAFFOLDING

- A. Provide all necessary scaffolding, staging, cribbing, tackle, hoists and rigging to locate the material, equipment, etc. of this section in its proper place on the project. All such temporary work shall be removed from the premises when no longer required.
- B. Pay all costs related to the transportation of materials and equipment to the job site. These costs shall be covered in the bid as no additional allowance will be made by the Owner.
- C. Scaffolding and hoisting equipment shall comply with requirements of all pertinent Federal, State and Local Laws and Codes.

24. EQUIPMENT PREPARATION

- A. At the completion of the job, or at such time as a portion of the work is to be turned over to the Owner, thoroughly clean all equipment installed under this section of the work.
- B. System testing and balancing, etc., shall be as described elsewhere in these specifications.

25. REMOVALS, ALTERATIONS AND REUSE

- A. The demolition drawings may not show all existing items. that are to be removed. Investigate the site and review all currently available drawings of the building to evaluate the work necessary to fulfill the requirements of the contract documents.
- B. Conduit:
 - 1. All power and system conduit no longer utilized shall be removed and disposed of.
 - 2. Conduit located in the permanent structure or in unaltered parts of the structure shall remain in place.
 - 3. Conduit located in remodeled areas that is in good condition, compatible for use in the new layout, may be reused in the new system.
- C. Boxes:
 - 1. Any box located in an advantageous location and in good condition may be utilized in the new system. Close all unused openings in box.
- D. Wire:
 - 1. Wire that is removed may not be reused.
 - 2. All wire that is to be installed shall be new.
 - 3. Existing materials, equipment, devices, conduit and wiring that is removed and not reused shall be disposed of or placed in storage as directed by the Owner's representative.

26. HAZARDOUS MATERIALS

- A. This item of the specifications has been inserted to address the potential problem or problems occurring when hazardous materials (asbestos type insulations, Askarel insulation, etc.) are encountered on a project involving work in an existing structure. Since the extent to which hazardous materials may have to be dealt with or whether, in fact, they will even be present on the site cannot always be determined prior to the actual demolition/construction phase of the project, the Contractor under this section of the work shall file a written request for inspection with the proper government agency or authority as described in the following paragraphs.

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- B. Regarding contract involvement with equipment utilizing Askarel or similar substances that contain PCB (polychlorinatedbiphenyl) formulations:
 - 1. The inspection request shall be filed with the Owner and the Engineer, listing the equipment involved, its location, and other pertinent data such as size/capacity and manufacturer. A decision concerning the course of action to be taken with regard to this equipment will then be made by the Owner and will become a matter of record.

27. WIRE, CABLE AND CONNECTORS

- A. All building feeder and branch circuit wiring not specifically shown or necessarily covered by code, shall be type THHN/THWN 600 volt insulation - 75 deg. C copper conductors, complying, with NEC Standards.
- B. Any wire size not specifically noted on the plans shall be at least equal in capacity to the rating of the overcurrent device serving the item to be connected and, in addition, shall be sized in accordance with the requirements of Articles 210.19 (a) and 215.2 (b) of the N.E.C. Note that where wire sizes specifically shown on the drawings have ampacity in excess of the protection device rating, those sizes shall be the minimum provided.
- C. Conductors shall not be drawn into a conduit segment until that segment of the conduit system is complete, with all terminations properly bushed and with the conduit free of moisture, foreign material, etc.
- D. All connectors and lugs shall be of the solderless type and large enough to enclose all strands of the conductors with sufficient mechanical strength to withstand vibration and normal strains.
- E. Joints or splices in branch circuit wiring and feeders must be located as per NEC. All joints and splices shall be made electrically and mechanically sound in accordance with best practice.
- F. All parallel runs of conductors shall be cut to equal length and installed accordingly.
- G. Note that common neutrals are prohibited. An individual neutral must be provided for each circuit.
- H. Low voltage system wiring shall be sized in strict accordance with the individual equipment and/or system manufacturer's specifications and/or recommendations and shall be plenum rated when not run in conduit. In addition, the wire type utilized shall be as recommended by the equipment manufacturer. Note that where code requirements dictate, or where specified, this wiring shall be run in conduit.

28. CIRCUIT AND CONDUCTOR IDENTIFICATION

- A. All branch circuit wiring for this work shall be color coded to match existing. If branch circuit wiring for the existing facility is not color coded, consult the Owner regarding desired color coding for this project. Each phase shall be a different color and the phase color shall be the same thruout the project including branch circuiting.

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- B. All feeders and conductors not color coded shall be identified with permanent, legibly marked, self-sticking labels stating circuit number, voltage, phasing and circuit origination. Labels shall be as manufactured by W. H. Brady Co. or approved equal. Labels made by embossing machines will not be acceptable.

29. CONDUIT AND OUTLET BOXES

- A. All line voltage wiring to be installed for this project shall be enclosed in rigid or intermediate metal conduit (RMC or IMC) or electrical metallic tubing conduit (EMT).
- B. All metal conduit shall be steel and in strict accordance with applicable ANSI standards for steel conduit. Each length shall bear the UL label.
- C. Conduit thruout shall be a minimum 3/4" size except for special connections, as detailed, and flexible runouts to fixtures, motors, etc., which may be 3/8".
- D. Conduit accessories such as outlet boxes, condulets, bends, fittings, etc., shall be manufactured by Appleton, Steel City, Russell and Stoll, Raco, Crouse Hinds or Midwest.

30. JUNCTION BOXES AND ACCESS DOORS

- A. Junction boxes, other than those furnished integrally with specific items of equipment or described elsewhere in the contract documents, shall be furnished and installed as required and shall be in strict accordance with NEC guidelines. Boxes shall be of minimum 12 ga. galvanized steel and shall have removable covers fastened with flat head countersunk bolts on maximum 8" centers. Note that where construction conditions dictate, junction boxes shall be watertight.
- B. Junction boxes shall be labeled to indicate circuits within. Use black permanent markers with minimum 1" letters. Such markers shall be visible from point(s) of accessibility.
- C. All boxes shall be installed in accessible locations or shall be provided with a suitable means of access. Where other acceptable means of access is not available, provide approved access doors of the proper size and type to meet accessibility requirements for the equipment involved.
- D. Access doors in rated walls and plastered, gypsum board or similar ceilings that are rated shall be fire rated as required. They shall meet NFPA requirements and carry the UL 1-1/2 hour "B" label. Construction shall incorporate a minimum 20 ga. steel insulated panel door, self-latching lock and continuous hinge. These doors shall be factory treated with a rust inhibitor and given a baked enamel primer.
- E. Access doors for other plastered surfaces shall be similar to Milcor Style K or L with 16 ga. steel frame and 14 ga. steel panel. A 22 ga. casing bead shall surround the frame and the unit shall be finished similar to the labeled doors.
- F. Access doors for all other construction conditions shall be all aluminum with extruded frame. Doors shall have a continuous hinge and flush latch. The units shall have a brush satin finish and shall be of a model suitable for the type of construction in which they are installed.

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- G. Access doors shall be as manufactured by Acudor, Cierra, Karp, Larsen's or Milcor.

31. GROUNDING

- A. Provide a complete grounding system as required to conform to the latest standards and to comply with all pertinent articles of the N.E.C.
- B. Equipment grounding conductors shall be run with the circuit conductors and shall consist of insulated solid or stranded copper conductors. No conduit grounding methods will be permitted.
- C. Note that all branch circuits serving patient care areas shall be installed in a metal raceway system.
- D. All grounding system connections shall be exothermically welded. Installation shall be made in strict accordance with manufacturer's instructions, utilizing the proper mold, miscellaneous supplies, etc. for each connection. All material used, including mold, weld material, tools and accessories, shall be supplied by one manufacturer. The connection material shall be by Cadweld, Thermoweld, or approved equal.
- E. Submit, for review, a written description of the method or methods to be used for grounding and the extent of the standards being implemented, taking into account the necessity for full compliance to applicable codes, ordinances and utility company requirements.

32. FIRESTOPPING

- A. Furnish and install the required firestopping. Materials, installation, etc., shall be as described below. Products shall be as manufactured by Hilti Inc., Specified Technologies Inc. or United States Gypsum Co.
- B. Definition:
 - 1. Firestopping is defined as the material or combination of materials used to retain integrity of fire-rated construction by maintaining an effective barrier against the spread of flame, smoke, water and hot gases through penetrations in fire rated wall and floor assemblies.
- C. Application:
 - 1. Tested firestop systems shall be used for all penetrations for the passage of ductwork and piping through floors, fire-rated vertical barriers (walls and partitions), horizontal barriers (floor/ceiling assemblies), and vertical service shaft walls and partitions.
- D. Quality Assurance:
 - 1. A manufacturer's direct representative (not distributor or agent) shall be on site during initial installation of firestop systems to train appropriate contractor personnel in proper selection and installation procedures. This will be done per manufacturer's written recommendations published in their literature and drawing details.

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2. Firestop system installations must meet requirements of ASTM E-814, UL 1479 or UL 2079 tested assemblies that provide a fire rating equal to that of construction being penetrated. In addition, proposed firestop materials and methods shall conform to applicable governing codes having jurisdiction.
3. For those firestop applications that occur for which no UL tested system is available through any manufacturer, a drawing representing the manufacturer's engineering judgment, derived from similar UL system designs or other tests, shall be submitted to local authorities having jurisdiction for review and approval prior to installation. Engineer judgment drawings must follow current requirements set forth by the International Firestop Council.

E. Submittals:

1. Manufacturer's submittals shall include specifications and technical data for each type of material including its composition and limitations, documentation of UL firestop systems to be used and manufacturer's installation instructions to comply with Section 1300. The submittal shall also include material safety data sheets as well as any engineering judgement drawings previously approved by local authorities.

F. Installer Qualifications:

1. The firestop system installer must be certified, licensed, or otherwise qualified by the firestopping manufacturer as having the necessary experience, staff, and training to install manufacturer's products per specified requirements as previously stated in Quality Assurance.

G. Requirements:

1. All holes, voids, miscellaneous openings, etc., made by penetrations in floor slabs (above grade) for systems provided under this section shall be completely sealed to insure water tight integrity. Installation of firestopping shall be scheduled after completion of penetrating item installation but prior to covering or concealing of openings.
2. Provide firestopping utilizing components that are compatible with adjacent surfaces, the substrates forming openings, and the items penetrating the firestopping under conditions of service and application as demonstrated by the firestopping manufacturer, based on testing and field experience. Note that materials containing flammable solvents shall not be used.

H. Materials:

1. Use only firestop products that have been UL 1479, ASTM E-814, or UL 2079 tested for specific fire-rated construction conditions conforming to construction assembly type, penetrating item type, annular space requirements, and fire-rating involved for each specific application.
2. For penetrations by combustible items (penetrants consumed by high heat and flame) including insulated metal pipe that is PVC jacketed, flexible cable or cable bundles and plastic pipe (closed piping systems), an

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Intumescent material is required to maintain fire rating of the assembly penetrated.

3. A firestop system with an "F" rating as determined by UL 1479, ASTM E814 or UL 2079, which is equal to the time rating of the construction being penetrated, must be utilized.

I. Preparation:

1. Surfaces to which firestop materials will be applied shall be examined for detrimental conditions. They shall be free of any substances that may effect proper adhesion.
2. Observe and comply with manufacturer's recommendations for temperature and humidity conditions before, during and after installation of firestopping.

J. Installation:

1. Firestop materials shall be installed in accordance with published recommendations listed under the heading "Through-Penetration Firestop Systems" in the UL Fire Resistance Directory. In addition, the manufacturer's instructions for installation of through-penetration materials shall be strictly followed.
2. Consult with the engineer prior to installation of any UL firestop systems that might hamper the performance of fire dampers as they pertain to duct work.

K. Miscellaneous:

1. Sealed penetration areas shall be checked thoroughly to ensure proper installation before concealing or enclosing said areas.

33. TEMPORARY SERVICE FOR CONSTRUCTION

- A. A complete temporary electric service for construction wiring, switches, overcurrent protection, ground fault interrupt devices, receptacles, etc. shall be provided under this section. Utilize the existing building service for temporary.
- B. The Owner will pay for all power used during construction.
- C. Extensions from the receptacles will be the responsibility of the respective contractors.
- D. Upon completion of the project, the disconnecting of all temporary circuits and the removal of all temporary wiring from the permanent system shall be done under this section of the work. The continuation of the warranty for the system, or any part thereof, shall not be affected by the foregoing.

* * * END OF SECTION * * *

SECURITY CAMERA SYSTEM

DIVISION 17000

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SECURITY CAMERA SYSTEM

DIVISION 17000

1. NOTE

- A. The Drawings and General Conditions of the Contract as well as Division 1 - General Specifications apply in the work covered under this section.

2. SCOPE

- A. The work included under this section shall consist of the furnishing of all labor, materials, equipment and incidentals necessary to provide the Security Camera System and related work indicated on the drawings and as called out in the following technical specifications. This shall include all testing and adjustments required and/or specified.

3. GENERAL PROVISIONS

- A. The Conditions of the Contract (General, Supplementary and other Conditions) and the General Requirements (Sections of Division 1) are hereby made a part of this Section.

- B. Work Included:

- 1. The work covered under this section of the specifications consists of furnishing all labor, equipment, supplies and materials, and in performing all operations, including cutting, channeling, chasing, excavating and backfilling necessary for the complete installation of security equipment in accordance with the specifications and the accompanying drawings, except as specifically noted otherwise.
- 2. The Work shall include, but not be limited to, the following:
 - a. Raceways
 - b. Conductors and Cables
 - c. Door Control and Monitoring System
 - d. Closed Circuit Television (CCTV) System
 - e. Facility Wide Intercom System (Existing)
 - f. Control Panels/Consoles
 - g. Programmable Logic Controllers (Existing)

h. All wiring connections

3. The Division 17 contractor shall specifically coordinate with the Construction Manager or General Contractor the environmental and construction conditions necessary in each of the control areas and equipment rooms for systems installation and operation. Durations of installation and testing activities must be specifically addressed to permit completion of the Division 17 systems concurrently with the remainder of the facility.

C. Work Excluded:

1. All conduit will be provided by the Division 16 Contractor. Additionally, a 'pull string' will be provided in each conduit.

D. Related Work Specified Elsewhere:

1. Refer to all other Division 17 specification sections and drawings and to specifications and drawings under the General Construction Contract to ascertain the extent of the work included.
2. Refer to Division 16 for conduit/raceway and electrical box specifications. All Division 17 raceways will be furnished and installed by Division 16 in accordance with the Division 16 specifications.

E. Permits and Inspections:

1. Obtain and pay for all permits and inspections required by all legal authorities and agencies having jurisdiction for the work. This shall be a part of the work of the Contractor performing the work requiring the permit or inspection. The certificates of all such permits and inspections shall be delivered to the Owner.

F. Definitions:

1. Provide: Furnish and install, completely ready for use, including all accessories required for operation.
2. Furnish: Purchase and deliver to the project site complete with every necessary appurtenance, support and accessory required for operation.
3. Install: Unload at the delivery point at the site and perform every operation necessary to establish secure mounting and correct operation at the proper location in the project.
4. Concealed: Embedded in masonry or other construction installed behind wall furring, with double partitions or hung ceilings, in crawl spaces, in shafts.

5. Exposed: Not concealed.
 6. By other trades: Shall mean by persons or parties who are not anticipated to be the Subcontractor for this trade working together with the General Contractor for the Security Systems. In this context the words "by other trades" shall not be interpreted to mean not included in the overall contract for Security Systems.
- G. Listed: Equipment is "listed" if of a kind mentioned in a list which:
1. Is published by a nationally recognized laboratory which makes periodic inspection of the production of such equipment.
 2. States that such equipment meets nationally recognized standards or has been tested and found safe for use in a specified manner.
- H. Labeled: Equipment is "labeled" if:
1. It embodies a valid label, symbol, or other identifying mark of a nationally recognized testing laboratory such as Underwriters' Laboratories, Inc.
 2. The laboratory makes periodic inspections of the production of such equipment.
 3. The labeling indicates compliance with nationally recognized standards or tests to determine safe use in a specified manner.
- I. Certified: Equipment is "certified" if:
1. Equipment has been tested and found by a nationally recognized testing laboratory to meet nationally recognized standards or to be safe for use in a specified manner.
 2. Production is periodically inspected by a nationally recognized testing laboratory.
 3. It bears a label, tag, or other record of certification.
 4. Nationally recognized testing laboratory: A testing laboratory which is approved, in accordance with OSHA regulations, by the Secretary of Labor.
 5. Division 17 Contractor: Shall mean the Security Systems Contractor.

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J. Reference Specifications, Materials, and/or Codes:

1. It shall be the Contractor's responsibility to submit all items necessary to obtain all required permits to the appropriate Regulatory Agencies, obtain all required permits, and pay all required fees.
2. All work shall conform to the following Building Codes:
 - a. National Electrical Code (NEC)
 - b. National Fire Protection Association (NFPA)
3. All work shall conform to all federal, state and local ordinances.
4. Where applicable, all fixtures, equipment, and materials shall be as approved or listed by the following:
 - a. Factory Mutual Laboratories (FM).
 - b. Underwriters Laboratories, Inc. (UL)
 - c. National Electrical Manufacturers Association (NEMA).
5. References to the National Electrical Code and National Fire Protection Association (NFPA) are a minimum installation requirement standard. Design drawings and specification sections shall govern in those instances where requirements are greater than those specified in the NEC and NFPA.
6. All material and equipment shall be listed, labeled or certified by Underwriters' Laboratories, Inc. where such standards have been established. Equipment and material which are not covered by UL Standard will be accepted provided equipment and material is listed, labeled, certified or otherwise determined to meet safety requirements of a nationally recognized testing laboratory. Equipment of a class which no nationally recognized testing laboratory accepts, certifies, lists, labels, or determines to be safe will be considered, if inspected or tested in accordance with national industrial standards such as NEMA, ICEA or ANSI. Evidence of compliance shall include certified test reports and definitive shop drawings.
7. All work shall meet or exceed the standards and procedures of the following:
 - a. National Fire Protection Association (NFPA):
 - b. NFPA 70
 - c. National Electrical Code
 - d. NFPA 101 Life Safety Code
 - e. Underwriters Laboratory (UL)

8. Include all items of labor and material required to comply with such standards and codes. Where quantity, sizes or other requirements indicated on the drawings or herein specified are in excess of the standard or code requirements, the specifications or drawings, respectively shall govern.

K. Interpretation of Contract Documents:

1. This section of the specifications and related drawings describe general provisions applicable to every section of Division 17.
2. Attention is directed to Instructions to Bidders and to Division 1, General Conditions, which are binding in their entirety on this portion of the work, particularly the paragraphs concerning materials, workmanship and substitutions.
3. Mention in these specifications or indications and/or reasonable implications on drawings, whereby articles, materials, operation or methods related to execution of the electrical work are noted, specified, drawn or described, thereby requires execution of each such item of work and provision of all labor, materials, equipment, and appurtenances required for execution thereof.
4. Particular attention is directed to the drawings and other contract documents for information pertaining to required items of work which are related to and usually associated with the work of this Division of the specifications, but which are to be provided as part of the work of other Divisions of the specifications, under the General Construction Contract.
5. No exclusions from, or limitations in, the language used in the drawings or specifications shall be interpreted as meaning that the appurtenance or accessories necessary to complete any required system or item of equipment are to be omitted.
6. The drawings of necessity utilize symbols and schematic diagrams to indicate various items of work. Neither of these have any dimensional significance nor do they delineate every item required for the intended installations. The work shall be installed, in accordance with the intent diagrammatically expressed on the drawings, and in conformity with the dimensions indicated on final working drawings and on equipment shop drawings. No interpretation shall be made from the limitations of symbols and diagrams that any elements necessary for complete work are excluded. When abbreviations appear on the drawings or specifications in lower case letters with or without periods, their meanings shall be the same as stated above.
7. Certain details appear on the drawings which are specific with regard to the dimensioning and positioning of the work. These details are intended

only for the purpose of establishing general feasibility. They do not obviate field coordination for the indicated work.

8. Information as to the general construction shall be derived from structural and architectural drawings and specifications only.
9. The use of words in the singular shall not be considered as limited where other indications denote that more than one item is referred to.
10. The drawings are diagrammatic and indicate the general arrangement of systems and equipment. For exact locations of building elements, refer to dimensioned drawings; however, field measurements take precedence over dimensioned drawings. Report any discrepancies discovered between security systems drawings and the drawings for other divisions of work under the general construction contract.

L. Description of Systems:

1. Furnish and install all materials for systems, resulting upon completion, in functioning systems in compliance with performance requirements specified. The omission of express reference to any parts necessary for, or reasonably incidental to, a complete installation shall not be construed as a release from furnishing such parts.
2. The wiring specified and shown on the drawings is for complete and workable systems. Any deviations from the wiring shown due to a particular manufacturer's requirements shall be made at no additional cost to the Owner. Changes in electrical service to equipment due to substitutions of equipment by any contractors shall be at the cost of that contractor.

M. Delineation of Work:

1. Division 17 Subcontractors are required to supply all necessary supervision and coordination of information to any contractor who is performing work to accommodate Division 17 installations. Where the Division 17 Subcontractors are required to install items which they do not purchase, they shall include for such items:
 - a. The coordination of their delivery.
 - b. Their unloading from delivery trucks driven in to any designated point on the project property line at grade level.
 - c. Their safe handling and field storage up to the time of permanent placement in the project.
 - d. The correction of any damage, defacement or corrosion to which they may have been subjected.

- e. Their field assembly and internal connection as may be necessary for their proper operation.
 - f. Their mounting in place including the purchase and installation of all supporting members, and fastening necessary to adapt them to architectural and structural conditions.
 - g. Their connection to building systems including the purchase and installation of all terminating fittings necessary to adapt and connect them to the building systems.
2. Where applicable, items which are to be installed but not purchased as part of the work of Division 17 shall be carefully examined upon delivery to the project. Claims that any of these items have been received in such condition that their installation will require procedures beyond the reasonable scope of the work will be considered only if presented in writing within one week of the date of delivery to the project of the items in question. The work under Division 17 shall include all procedures, regardless of how extensive, necessary to put into satisfactory operation, all items for which no claims have been submitted as outlined above.
3. The specifications for the overall construction of the project, under the general construction contract, delineate various items of work under separate section headings. As described in the following paragraphs this delineation is defined to the extent that it affects the Division 17 work category. In the absence of more detailed information, these tasks shall be taken as a specific instruction to Division 17 Contractors to include the work assigned to them. Indications that each Contractor is to perform an item of work means that he is to perform the work for his own accommodation only, unless specifically noted otherwise.
4. Division 17/Division 16/ delineation of work shall be as follows:
- a. Division 17 Contractor shall be responsible for furnishing and installing all equipment, wiring, installation and testing of systems defined in Division 17.
 - b. All wiring to final connections for CCTV system and new Wonderware HMI monitoring systems shall be the responsibility of Division 17.
 - c. Division 16 Contractor shall be responsible for ensuring that emergency power is provided to all security systems.
 - d. Division 16 Contractor shall be responsible for ensuring that all security systems equipment is powered from an uninterruptible power system (UPS). Division 16 shall be responsible for distributing UPS power to the security equipment.

5. Division 16 contractor responsibilities shall include the following:
 - a. All conduit systems shall be furnished and installed by the Division 16 Contractor, in accordance with the Division 17 specifications. Division 16 Contractor shall be responsible for ensuring that adequate conduit facilities are installed to support the intended functions of Division 17.
 - b. Install any new cabinets required by the Division 17 contractor.
 - c. All conduit must be labeled as to destination and provided with a 'pull string'.
6. Division 17 Subcontractor Responsibilities shall include the following:
 - a. Connect all new and/or existing security equipment as required.
 - b. Provide all hardware and systems to control the new CCTV cameras and new Wonderware HMI touch screens.
 - c. After installation, verify proper control operation of all systems.

N. Quality Assurance:

1. All equipment and materials required for installation under these specifications shall be new (less than one (1) year from manufacturer) and without blemish or defect. All equipment shall bear labels attesting to Underwriters Laboratories approval where subject to Underwriters Laboratories label service. Where no specific indication as to the type or quality of material or equipment is indicated, a first-class standard article shall be furnished. All manufacturers of equipment and materials pertinent to these items shall have been engaged in the manufacture of said equipment a minimum of three (3) years and, if so directed by the Engineer, be able to furnish proof of their ability by submitting affidavits and descriptive data on their product of size and magnitude comparable to that specified herein.
2. Each major component of equipment shall have the manufacturers name, address, model number and rating on a plate securely affixed in a conspicuous place. The nameplate of a distributing agent *will* not be acceptable. NEMA Code Ratings, UL label, or other data which is die-stamped into the surface of the equipment shall be stamped in a location easily visible. Performance as delineated in schedules and in the specifications shall be interpreted as minimum performance. In many cases equipment is oversized to allow for pickup loads which cannot be delineated under the minimum performance.
3. All equipment of one type shall be the product of one manufacturer.

4. All welders shall be certified by the Welding Bureau of the Mechanical Contractors Association of America for the appropriate service, and shall perform all welding in accordance with the Welding Bureau's procedures and the ASA Code for welding.

O. Cooperation With Other Trades:

1. The Contractor shall coordinate the Work of this Section with that of other Sections as required to ensure that the entire work of this Project will be carried out in an orderly, complete and coordinated fashion. Bidders are cautioned to check their equipment against space available as indicated on drawings, and shall make sure that proposed equipment can be accommodated. If interferences occur, Contractor shall bring them to the attention of Engineer, in writing; or, Contractor shall, at his own expense, provide proper materials, equipment, and labor to correct any damage due to defects in his work caused by such interferences.

P. Submittals:

1. "OR EQUAL" CLAUSE: Notwithstanding any reference in the specifications to any article, device, product, material, fixture, form or type of construction by name, make, or catalog number, such references shall be interpreted as establishing a standard of quality.
2. Approvals and Substitutions:
 - a. Request for approvals and substitutions will be considered only if submitted in accordance with procedures outlined in the Special Conditions, regarding prior approval, and equipment and material approvals and substitutions.
 - b. Any additional materials, equipment, components, accessories, etc. items required for the satisfactory installation of approved substitute equipment shall be furnished and installed at no additional cost to the Owner. This includes but shall not be limited to changes to branch circuits, circuit protective devices, conduits, wire, feeders, controls, panels and correlation with other work, subject to the approval of the Engineer.
3. Verification of Dimensions, Etc.
 - a. The Contractor shall visit the premises and thoroughly familiarize himself with all details of the work, working conditions, verify all dimensions in the field, advise the Engineer of any discrepancy, and submit shop drawings of any changes he proposes to make. in quadruplicate for approval. before starting the work. Contractor shall install all equipment in a manner to avoid building interference.

Q. Shop Drawings:

1. The Contractor shall not purchase any materials or equipment prior to receipt of reviewed shop drawings from the Engineer.
2. Prior to assembling or installing the work, prepare and submit shop drawings for approval in accordance with the General Conditions and as hereinafter specified.
 - a. Shop drawings are required on all items of material and equipment.
 - b. Scale drawings shall be prepared showing dimensional locations in plan and elevation of all equipment. Where work is to be performed within a municipality, approval shall be obtained from proper authority before submitting shop drawings.
 - c. Submit catalog information, factory assembly drawings and field installation drawings as required for complete explanation and description of all items of equipment.
3. All submittals shall include adequate descriptive literature, catalog cuts, shop drawings and other data necessary for the Engineer to ascertain that the proposed equipment and materials comply with specification requirements. Catalog cuts shall be legible and shall clearly identify equipment being submitted.
4. Before preparing drawings, Contractor shall consult all contract drawings and specifications in detail, including those for the General Construction Contract, obtain manufacturer's recommended installation instructions, and have shop drawings prepared based on specific equipment and material intended for installation. A principal of the contracting firm shall sign all shop drawings (indicating conformance with plans and specifications) before submitting to the Engineer or releasing to workmen.
5. Review of shop drawings or schedules by Engineer shall not relieve the Contractor from responsibility for deviations from drawings or specifications, unless he has in writing (and in letter form) called attention to such deviations at the time of submission and secured written approval; nor shall it relieve him from responsibility for errors in shop drawings or schedules.
6. Submittals for individual systems and equipment assemblies which consist of more than one item or component shall be made for the system or assembly as a whole. Partial submittals will not be considered.
7. Make submittals for the equipment and materials in accordance with the General Conditions.

- a. Submittals shall be marked to show specification reference including the section and paragraph numbers.
 - b. Submit each section separately.
- 8. The submittals shall include the following:
 - a. The documents indicated under qualifications in this section.
 - b. Technical information for all materials and equipment. Information must confirm compliance with contract requirements. Include the manufacturer's name, model or catalog numbers, catalog information, technical data sheets, shop drawings, pictures, nameplate data and test reports as required.
 - c. If equipment cabinets are changed – provide equipment room layouts in plan and elevation views, all equipment, cabinets, and wireways. Each cabinet must be labeled.
 - d. If equipment cabinets are changed – detailed equipment cabinet assembly drawings. Cabinet details must show each piece of equipment, including surge protection, fuses, relays and terminal strips. All wiring terminals must be labeled on the drawings to indicate the field devices, communications lines, or power supplies connected to them.
 - e. Elementary and interconnection wiring diagrams for communication and signal systems, control system and equipment assemblies.
 - f. Functional diagrams of the integrated system and of subsystems.
 - g. Functional descriptions of the system hardware and software, specifically related to the functional diagrams and the system integration.
- 9. Documents will not be accepted or considered unless:
 - a. They comply with the requirements of the General Conditions.
 - b. They include complete information pertaining to appurtenances and accessories.
 - c. They are submitted as a package where they pertain to related items.
 - d. They are properly marked with service or function identification as related to the project, where they consist of catalog sheets

displaying other items which are not applicable and are marked with pertinent specification paragraph number.

- e. They are properly marked with external connection identification as related to the project where they consist of standard factory assembly or field installation drawings.

R. Record (As-Built) Drawings:

1. The Contractor, in accordance with the General Conditions, shall keep a record set of drawings on the job and, as construction progresses, shall show the actual installed location of all items, material, and equipment of these job drawings.
2. At the time of final inspection, two corrected sets of drawings shall be delivered to the Engineer. All drawing costs to be by the Contractor.
3. As-built drawings shall be produced with AUTOCAD 2000 and all drawing files shall be given to the Owner.
4. Provide an additional set of corrected drawings in a moisture proof storage tube and mount the tube in the main equipment room.

S. Owner's Manual:

1. The Contractor, in accordance with the General Conditions, shall submit to the Owner (through channels) three identical manuals that will contain manufacturer's brochures of all items installed by the Contractor.
2. The cover of the manual shall state the following information:
 - a. Project Name
 - b. Location
 - c. Owner
 - d. Electrical Engineer
 - e. Security Systems Contractor (name, address, phone number)
 - f. Project Supervisors (general and electrical)
 - g. Date Of Project Completion
3. The manual shall be subdivided into separate sections with tab dividers to identify subsystems of the integrated system.

T. Maintenance Documents:

1. The Contractor shall furnish to the Owner two complete sets of maintenance documents to include as a minimum the documentation as described in this section. For documents of a size greater than 11" x 17" one print shall be furnished. Drawings shall be produced with AUTOCAD 2000 and drawing files shall be given to the Owner.

- a. System descriptions.
- b. System functional schematics.
- c. Detailed wiring diagrams to identify cabling, termination and routing.
- d. Panel assembly drawings to identify location of functional components, terminal strips and equipments as required to correlate with system drawings.
- e. Operating manuals to describe operational procedures and methods of equipments.
- f. Maintenance manuals with descriptions and drawings as required to maintain equipments to the board or functional unit level.
- g. Description of software and user programmable functions. Procedures for user programmable functions shall be included.
- h. For systems where the program resides on a disk or other similar storage medium, the Contractor shall furnish a spare copy of the disk, or similar medium, to the Owner as a spare.
- i. Where multiple systems are integrated into a single functional system, documentation shall include a description of the integrated system.
- j. All passwords and licences must be provided for the Allen-Bradley PLC and the Wonderware HMI software to the owner.
- k. Complete documentation of the PLC logic must be provided to the owner.

U. Materials:

- 1. General Requirements: All products shall be new and unused and without blemish or defect.
- 2. Substitutions: When the Contractor substitutes equipment manufactured by a vendor other than the specified manufacturer, the Contractor shall become responsible for the operation of the product in the intended system, including all related costs required to make the design work, function, and fit in the allocated space.

3. Manufactured Products:
 - a. Materials and equipment furnished shall be of current production by manufacturers regularly engaged in the manufacture of such items, for which replacement parts are available.
 - b. When more than one unit of the same class of equipment or material is required, such units shall be the products of a single manufacturer.
4. Equipment Assemblies and Components:
 - a. All components of an assembled unit need not be products of the same manufacturer, however, all components must be acceptable to the Engineer.
 - b. Manufacturers of equipment assemblies, which include components made by others, shall assume complete responsibility for the final assembled unit.
 - c. Components shall be compatible with each other and with the total assembly for the intended service.
 - d. Constituent parts which are similar shall be the product of a single manufacturer.
 - e. Moving parts of any element of equipment of the unit normally requiring lubrication, shall have means provided for such lubrication, and shall be adequately lubricated at the factory prior to delivery.
5. All factory wiring shall be identified on the equipment being furnished and on all wiring diagrams.
6. When factory testing is specified:
 - a. The Engineer shall have the option of witnessing factory tests. The Contractor shall notify the Engineer a minimum of 15 working days prior to the manufacturer's making the factory tests.
 - b. Four copies of certified test reports containing all test data shall be furnished to the Engineer prior to final inspection and not more than 90 days after completion of tests.
 - c. When equipment fails to meet factory test and reinspection is required. The contractor shall be liable for all additional expenses.

V. Equipment Identification:

1. In addition to the requirements of the National Electrical Code, install an identification sign which will clearly indicate information required for use and maintenance of items such as cabinets, control devices and other significant equipment.
2. Nameplates shall be laminated black phenolic resin with a white core and engraved lettering, a minimum of 1/4-inch high. Nameplates that are furnished by manufacturer, as a standard catalog item, or where other methods of identification is herein specified, are exceptions.

W. Surface Conditions:

1. Prior to any Work, the Contractor shall carefully inspect the installed Work of all other Trades and verify that all such Work is complete to the point where his installation may properly commence.
2. Verify that all equipment may be installed in accordance with. all pertinent codes and regulations, the original design, and the referenced standards.
3. In the event of discrepancy, immediately notify the Engineer.
4. Do not proceed with installation in areas of discrepancy until such discrepancies have been fully resolved.
5. Return to original (pre-construction) condition any paved areas, sidewalks, planting, etc., disturbed during system installation.

X. Installation:

1. Install all equipment in strict accordance with the manufacturer's recommendations and reviewed shop drawings.
2. Secure equipment using fasteners suitable for the use, materials, and loads encountered. If requested, submit evidence proving suitability. Do not attach electrical materials to roof decking, removable or knockout panels, or temporary walls and partitions, unless indicated otherwise.
3. Equipment location: Shall be as close as practicable to locations shown on drawings.
4. Working spaces shall be not less than specified in the National Electrical Code for all voltages specified.
5. Where the Engineer determines that the Contractor has installed equipment not conveniently accessible for operation and maintenance, equipment shall be removed and reinstalled as directed at no additional

cost to the Owner. "Conveniently accessible" is defined as being capable of being reached without the use of ladders, or without climbing or crawling under or over obstacles such as motors, pumps, belt guards, transformers, piping, and duct work.

Y. Work Performance:

1. Coordinate location of equipment and conduit with other trades to minimize interferences.
2. Holes through concrete and masonry in new and existing structures shall be cut with a diamond core drill or concrete saw. Pneumatic hammer, impact electric, hand or manual hammer type drills shall not be allowed, except where permitted by the Engineer as required by limited working space.
3. Holes shall be located so as not to affect structural sections such as ribs or beams.
4. Holes shall be laid out in advance. The Engineer shall be advised prior to drilling through structural sections, for determination of proper layout.
5. Structural Penetrations: Where conduits, wireways, and other raceways pass through fire partitions, fire walls or walls and floors, install a firestop that provides an effective barrier against the spread of fire, smoke and gases. Fire-stop material shall be packed tight, and completely fill clearances between raceways and openings. Fire-stop material shall conform to the following:
 - a. Fire-stopping material shall maintain its dimension and integrity while preventing the passage of flame, smoke and gases under conditions of installation and use when exposed to the ASTM E119 time-temperature curve for a time period equivalent to the rating of the assembly penetrated. Cotton waste shall not ignite when placed in contact with the non-fire side during the test. Fire-stopping material shall be noncombustible as defined by ASTM E136; and in addition for insulation materials, melt point shall be a minimum of 1700 degrees F for 1-hour protection and 1850 degrees F for 2-hour protection. Refer to architectural drawings for fire ratings of walls.
 - b. Floor, exterior wall and roof seals shall be watertight. Walls and floors which are *cored* for installation of conduit shall be sleeved with steel tubing, grouted and the space between the conduit and sleeve filled as specified herein.
 - c. Tubing shall extend one inch minimum above finished floor.

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6. Hangers and other supports shall support only equipment and materials. Provide not less than a safety factor of 5, which shall conform with any specific requirements as shown on the drawings or in the specifications.
7. In security areas, exposed equipment and materials, including screws and other fasteners, shall be tamperproof. Cover plates shall have beveled edges.

Z. Protection and Cleaning of Systems and Equipment:

1. Protect all materials and equipment from damage during storage at the Site and throughout the construction period. Equipment and materials shall be protected during shipment and storage against physical damage. dirt, moisture, cold and rain.
2. Damage from rain, dirt, sun and ground water shall be prevented by storing the equipment on elevated supports and covering them on all sides with securely fastened protective rigid or flexible waterproof coverings.
3. Piping shall be protected by storing it on elevated supports and capping the ends with suitable closure material to prevent dirt accumulation in the piping.
4. During construction cap the top of all conduits and raceway installed vertically.
5. During installation, equipment shall be protected against entry of foreign matter on the inside; and be vacuum cleaned both inside and outside before testing, operating and painting.
6. Damaged equipment shall be, as determined by the Engineer, placed in first class operating condition or be returned to source of supply for repair or replacement.
7. Painted surfaces shall be protected with removable heavy kraft paper, sheet vinyl or equal, installed at the factory and removed prior to final inspection.
8. Damaged paint on equipment and materials shall be repainted with painting equipment and finished with same quality of paint and workmanship as used by manufacturer so repaired areas are not obvious.

AA. Identification:

1. Upper case letters of uniform height; centered on device, coverplate, or enclosure; engraved letters filled with a contrasting color; and all characters made clearly and distinctly.

2. Use abbreviations defined in the contract documents whenever possible. designations for labeling, unless indicated otherwise.

AB. Access to Equipment:

1. All equipment shall be installed in location and manner that will allow for convenient access for maintenance and inspection.

AC. Cable Terminations and Dress:

1. Installation of signal, video, communication, and control conductors shall adhere to the following:
 - a. Cables shall be dressed and tie wrapped in all cabinets and/or at control panels and consoles to present a neat and orderly installation. At the discretion *of* the Contractor, cable duct may be installed in equipment cabinets and control consoles to facilitate satisfying this requirement.
 - b. Cables shall be secured to equipment cabinet backboards, console members or to other system components using cable clamps and wraps. Contractor shall furnish and install cable support posts if required to facilitate system installation.
 - c. All cables and/or conductors shall be terminated with approved cable termination connectors compatible with the specific termination.
 - d. All cables and/or conductors entering the facility from a point exterior to the building shall be equipped with lightning protection. Protector shall be located at first cabinet through which the cable or conductor passes upon entering the building.

AD. Surge/Lightning Protection:

1. All electrical circuits supplying power to system components furnished under Division 17 shall be equipped with surge protectors. These surge protectors shall be furnished and installed by the Division 17 Contractor. It shall be the responsibility of the Division 17 Contractor to coordinate installation and to verify that protectors are installed properly.

AE. Cleaning:

1. Daily during construction and prior to Owner acceptance of the building, remove from the premises and dispose of all packing material and debris caused by work performed under Division 17.

2. Remove all dust and debris from interiors and exteriors of electrical equipment. *Clean* accessible current carrying elements prior to being energized.

AF. Power Distribution/Protection:

1. Electrical power shall be provided by the Division 16 Contractor to locations and equipments as described by the Division 16 plans and specifications. A single point of power supply shall be provided to each equipment panel. It shall be the responsibility of the Division 17 Contractor to provide power distribution and associated overcurrent protection for all circuits deriving power from the single point of power supply.
2. For three phase supplies, the Contractor shall balance the connected load on all phases.

AG. Division 17 Contractor Qualifications:

1. General Requirements:
 - a. The Division 17 Contractor shall have total responsibility for the coordination and installation of the work shown and described in the Division 17 drawings and specifications. The Division 17 Contractor shall be a company specializing in the design, fabrication, and installation of HMI systems for integrated security and communications control systems. The contractor must provide documented history of successful installations of HMI touch screens in jails, prisons or detention facilities.
 - b. A walkthrough of the facility is required to become familiar with the operation of the Wonderware HMI projects and the Allen-Bradley PLC equipment.
2. Technical Proposal Requirements:
 - a. The evaluation of each prospective Division 17 Contractor's qualifications and responsibility will be based on the technical proposal, which shall be submitted with the Contractor's bid. The technical proposal shall include the following:
 1. A history of the company that reflects the integration of PLC and HMI systems in security applications.
 2. A list of references for the Contractor that can verify the successful integration of PLC and HMI systems similar to those described in the specifications for this project.

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3. The references must include the name and phone number of an individual familiar with the performance, operation, and maintenance of the electronic systems listed.
 4. A description of the overall system function, architecture, and integration, which shall include a functional block diagram of the integrated system.
 5. A functional description and samples of the HMI projects and screens that will be furnished.
 6. A functional description of the PLC logic that will be furnished.
 7. A description of the plan for service of the system, including anticipated response times for the various subsystems. The minimum response time for servicing the Security System is 24 hours.
 8. NOTE: ALL SEVEN ITEMS MUST BE ADDRESSED IN THE TECHNICAL PROPOSAL OR THE CONTRACTOR MAY BE DECLARED NON-RESPONSIVE.
- b. A walkthrough of the facility is required to become familiar with the operation of the existing HMI projects and the Allen-Bradley PLC.

AH. Completion:

1. General: Upon completion of the work, remove excess debris, materials, equipment, apparatus, tools and the like and leave the premises clean, neat and orderly.
2. Results Expected:
 - a. All systems shall be complete and operational, and all controls shall be set and calibrated.
 - b. All testing, start-up and cleaning work shall be complete.
3. Demonstration:
 - a. Upon written notification by the Contractors that all systems are complete and tested, the Engineer will visit the project for a demonstration of the building system and an inspection of the completed work.

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- b. Items which do not comply with the Contract Documents or which function incorrectly will be listed, and the list will be submitted by the Engineer to the Contractors for repairs.
 - c. After all corrections have been made the Contractors shall notify the Engineer who will recheck the systems for compliance of all items listed.
 - d. All bright metal or plated work shall be thoroughly polished. All pasted labels, dirt and stains shall be removed from the devices.
 - e. After all final tests and adjustments have been completed, a competent employee of the Contractor shall be provided to instruct the Owner's Representative in all details of operation and maintenance for equipment installed. Supply qualified personnel to operate equipment for a period of 30 days to assure that Owner's Representative is qualified to take over operation and maintenance procedures. Instruction periods shall be as designated by the Owner and shall not necessarily be consecutive. Manufacturer's representative shall conduct training on specialized electronic systems.
4. Maintenance Materials:
- a. All special tools for proper operation and maintenance of the equipment provided under this Specification shall be delivered to the Owner's Representative and a receipt requested for same.
 - b. Where specified, provide Owner's Representative with spare parts, equipment and materials and request a receipt for same.
 - c. The Division 17 Contractor shall provide to the Owner a step-by-step diagnostic trouble-shooting checklist for each major subsystem.
5. Guarantee, Maintenance and Service:
- a. All Work shall be guaranteed to be free from defects. Any defective materials or workmanship as well as damage to the Work of all other Trades resulting from same shall be replaced or repaired as directed by the Owner's representative for the duration of the stipulated guarantee periods.
 - b. Subcontractor for each section of the work under this Division will furnish to the Owner, through channels, a written guarantee that the installation, including controls and all other equipment covered under each section of the specifications, performs in a quiet, efficient, and satisfactory manner.

- c. The primary supplier of security and communications systems hardware and software shall guarantee, through the Contractor, in writing, all phases of his system (including but not limited to, software, hardware, peripheral equipment) for a period of one year from the date of written final acceptance against defective materials, design and workmanship. Upon receipt of notice from the Owner of failure of any part of the guaranteed system, the Contractor, with the assistance of the supplier, shall promptly restore the defective component to provide an acceptable system at no cost to the Owner. All defective components will be replaced before they are removed from the facility.
- d. The guarantee period shall commence upon acceptance by the Owner. Acceptance tests and procedures shall be developed by the Contractor and accepted by the Engineer.
- e. Acceptance by a manufacturer of an order for equipment for this contract signifies acceptance of this guarantee.
- f. During the guarantee period, there shall be no charges to the Owner for service calls (mileage, labor, travel, expenses, etc.) for guarantee work.
- g. The maintenance response time shall be within 8 hours for the personal alarm system and the door control and monitoring system. The maximum response time for all other systems is 24 hours.

6. Training:

- a. Provide 40 hours of system operation training to facility personnel as scheduled by the Owner.
- b. Provide 40 hours of system troubleshooting and maintenance training to the facility maintenance staff as scheduled by the Owner.
- c. Training shall not begin until system substantial completion has been granted.

4. SYSTEM DESCRIPTION AND INTEGRATION

A. General Conditions:

- 1. The Conditions of the Contract (General, Supplementary and other Conditions) and the General Requirements (Sections of Division 1) are hereby made a part of this Section.

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B. Work Included:

1. Furnish all materials and labor necessary to complete the installation of specific systems described herein and as shown on the plans and an integration of all systems as indicated, specified herein or both. The work of this Section includes, but is not necessarily limited to, the following:
 - a. Power Supplies, Cables and Conductors
 - b. Door Control System
 - c. Closed Circuit Television System
 - d. Intercom System
 - e. Paging System
 - f. Control Panels/Control Consoles
 - g. Security Monitoring and Control System
 - h. System Integration of all Systems

C. Reference Specifications, Materials, and/or Codes:

1. NEC 2008

D. Manufacturer's Recommendations:

1. All systems described herein shall be fabricated and installed in strict accordance with the manufacturer's published recommendations and in compliance with all applicable building codes and regulations.

E. Cooperation with other Trades:

1. The Contractor shall coordinate the work of this Section with that of the Division 16 contractor to ensure that the entire work of this project will be carried out in an orderly, complete and coordinated fashion.

F. Submittals:

1. Substitutions: Contractors, subcontractors, suppliers and manufacturers may request the approval of the Engineer to substitute materials, products or equipment for the specified products, unless noted otherwise. The Engineer's approval will be required even though "or equal" or synonymous terms are used. It shall be the responsibility of the Contractor to assume all costs incurred because of additional work and/or changes required to incorporate the proposed substitute into the project, including possible extra compensation due to the Engineer.

2. Note: This project is an addition to an existing security network. For this reason, all product brands/manufactures used on the existing security network must be used on the new system additions unless specifically changed in these specifications. Refer to the separate sections for specific brands and manufactures.
3. SHOP DRAWINGS: Prior to purchase, fabrication and installation, prepare and submit shop drawings of work to Engineer for approval thereof. Shop drawings shall be based on drawings, specifications and field conditions and/or measurements essential for proper fitting of system components with other construction and shall present complete information as to fabrication and erection.
4. CATALOG DATA: Prior to purchasing, submit complete catalog data and descriptive literature of specified items to Engineer and obtain approval thereof. Include installation drawings as required.
5. SAMPLES: Prior to purchase or fabrication, submit two samples of each type and/or color of factory finish of each material specified and obtain Engineer's approval thereof.
6. QUALITY CONTROL: Conform to the requirements for Quality Control under General Conditions where same governs the materials and procedures described under this Section.
7. RECORD "AS-BUILT" DRAWINGS: The Contractor shall, during the progress of the work, keep accurate data on locations and elevations of the work and any changes to the drawings and/or specifications so that he can record this information in the required "as-built" record drawings. This information must be promptly recorded by the Contractor throughout the progress of the work so that the record set maintained by the Contractor is always current with the work accomplished to date.
8. GUARANTEE: Contractor shall submit written guarantee stating that all work under this Section shall be guaranteed against any defects in materials and/or workmanship during the guarantee period and that defective work which develops during guarantee period shall be repaired and/or replaced at no additional cost to the Owner. Section 17000-3.13 E describes the Guarantee and Service/Maintenance requirements to be included in the base bid.

G. Existing Systems Description:

1. Current Security System/Network – Component hardware/software
 - a. Wonderware version 7.0
 - b. There are a total of 8 Wonderware HMI projects

- c. 2 projects running in Master Control are identical
- 2. Allen-Bradley PLC
 - a. PLC 5
 - b. Remote PLC racks on several floors
- 3. PC Work Stations and Servers
 - a. Each Wonderware project runs on a PC running Windows NT
 - b. Wonderware communicates with the PLC over Ethernet.
- 4. Current Security System/Network - Functions
 - a. The PLC's collect inputs from the Intercom call pushbuttons, Door limit switches, etc.
 - b. The Wonderware HMI projects monitor the PLC inputs and direct the PLC to turn outputs (solenoids) on and off.
 - c. The Wonderware projects have custom display screens that the Correction Officers use to direct the operation of doors, intercoms, CCTV camera and monitors, etc.
 - d. A redundant Wonderware projects in the Main Control Room constantly monitor the PLC's so that if a local project fails there is no interruption of the security network.
 - e. Both Main Control projects have the ability to take over any Wonderware project at any time throughout the facility.
 - f. CCTV project is responsible for switching the existing cameras through multiplexers. Wonderware utilizes serial communications to activate the correct camera per the camera call-up location.
 - g. Scripting is utilized from each separate project to communicate to CCTV project. The scripting information provides the data needed by CCTV to switch the cameras.
- 5. Audio and Video
 - a. Intercom buttons, when pushed, create a call on the Wonderware screen. Upon acknowledgement of Next Call CCTV sends serial communications to camera multiplexers. A signal then turns on cameras at correct intercom location. An audio signal can then be established or denied.

H. New Security System Additions:

- 1. Hardware and software
 - a. There will be four (4) new Wonderware HMI projects created for the control of the new CCTV system and the designated doors and

intercoms. Additionally, the eight existing projects will need to be modification to work with and support the new cameras and system changes where required. All existing Wonderware/Touch Screen projects must be upgraded to new PC's running Windows XP Pro.

- b. All projects in the blocks will have to be modified that display the new CCTV system cameras.
 - c. Unique screens will have to be created showing the new cameras and floor plan graphics of the new areas of the facility being monitored.
 - d. New screens will also have to be added to both Main Control Room projects to allow them to display all of the new CCTV cameras.
 - e. New floor plan graphics must be added to the Main Control Room Wonderware projects to display the new CCTV cameras.
2. 4 new projects will need to be created.
- a. One (1) on the second floor POD A
 - b. One (1) on the second floor POD B
 - c. One (1) on the fourth floor POD C
 - d. One (1) on the fourth floor POD D
 - e. Each new project must display the floor plan graphics for the area it is monitoring.
 - f. Each new project must display the icons for any doors and intercoms that will be activated and/or monitored by that specific HMI workstation.
 - g. The new HMI Wonderware touch screen projects will be integrated into the complete Wonderware/touch screen/PLC network that is currently operating in the facility.
 - h. The new HMI Wonderware touch screen projects will control camera call-up by using the existing PLC to command the CCTV matrix switch.
 - i. Communicates to the existing PLC will be over Ethernet.
3. Definitions:
- a. "Control Panel" shall refer to any type of operator control station, whether a video monitor or a metallic panel with mechanical switches.
 - b. "Switch" shall refer to any mechanical device or video icon used for making, breaking, or changing the connections in an electrical control circuit.

4. Door Control Systems:

- a. The scope of work includes providing control and monitoring systems for all electrically/pneumatically operated doors that will be controlled from the new Wonderware projects. The door locking hardware is currently connected to the existing Allen-Bradley PLC. The new projects will obtain the door status and control from this PLC.
- b. The new Wonderware projects shall monitor and control all electric/pneumatic doors and other devices as specified and as shown on the plans.
- c. Note: This project is an addition to an existing security network. For this reason, the existing PLC door interlock groups must be utilized. This information will be provided to the successful bidder.
- d. During emergency release from the touch screen, all cell and egress door locks shall remain unlocked until reset at the control console.
- e. All doors equipped with a door position switch and/or a latch bolt monitor switch shall cause an alarm on the control panel if opened by means other than a control panel.

5. Closed Circuit Television System:

- a. Closed circuit television systems shall provide visual surveillance of areas as shown on the drawings.
- b. Cameras located exterior to the building shall be enclosed in environmentally controlled enclosures. All enclosures shall be equipped with tamper proof hardware.
- c. Video switching shall be effected such that upon acknowledging an intercom call-in from a remote station equipped with CCTV cameras, the cameras on both sides of the door will be automatically switched to the intercom call-up video monitors.
- d. Manual selection of CCTV cameras shall be effected through switches on the control console. This shall provide the operator the flexibility to monitor specific cameras.
- e. All cameras shall be identified with on-screen titles.
- f. Acceptable manufactures of new cameras shall be Bosch, Vicon or Pelco.

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- g. Note: This project is an addition to an existing security network. For this reason, the CCTV cameras control screens on 8 existing projects will need to be edited to include CCTV control for the new cameras installed along with the new CCTV controls in the new Wonderware projects. Additionally, the existing PLC logic will need to include the new CCTV cameras where needed.
- 6. Dedicated Intercom System:
 - a. The existing intercom systems shall be utilized by the new Wonderware touch screens where specified.
- 7. Control Consoles:
 - a. Control consoles and cabinets shall be furnished by the Division 17 Contractor and the casework contractor in each control area for mounting CCTV monitors, control and communicator panels, intercommunication equipment, and miscellaneous alarms and controls, as shown on the plans.
 - b. Consoles shall consist of bench frames with turrets or turrets only as shown on the drawings.
 - c. Equipment installed in each console shall be located for access from the front for maintenance functions.
 - d. Division 17 Contractor to furnish and install control panels in each console and furnish detailed information as required for console fabrication.
 - e. Division 17 Contractor to furnish and install panel-mounting hardware, blank panels, and trim strips.
 - f. All console panels and devices shall be color coordinated and mounted so as to not extend above any other panel or turret.
- 8. Control Panels:
 - a. The existing control panels in the security equipment room will be re-used where possible. New cabinets will be provided by the Div. 17 contractor where needed.
 - b. The new CCTV cameras will be connected to the new and/or existing matrix to provide an integrated CCTV system. The Div. 17 contractor must determine whether the existing switch can be re-used.
 - c. The new Wonderware projects shall effect an integration of associated functions which are required for an operator to

perform functions. For example, for control of a single door, the console operator will typically require voice communication, CCTV surveillance, door control capability, and door status monitoring.

- d. Note: This project is an addition to an existing security network. The current security system must be maintained at all times.

I. Systems Integration:

1. General: All systems included in Division 17 shall function as an integrated system. These functions are specified herein and shall include the following:
2. Equipment shall be installed in consoles to effect a uniform, integrated appearance. Human engineering considerations shall be employed to facilitate the operation of the facility by staff personnel having limited technical training.
3. Annunciator and control panels with associated logic controllers shall provide the following features or functions for operator control.
 - a. An intercom call-in shall provide a low level chime type audible signal and provide visual annunciation on the graphic panel of the station calling. Chime for a waiting call shall not sound while an intercom is connected.
 - b. Video monitors shall have a "locate intercom call" switch to automatically connect the next intercom in queue and change the video display to show the screen with the calling intercom.
 - c. Operator shall respond to call-in by pressing an "Acknowledge" button associated with each remote station. Acknowledging call-in shall silence audible signal, cause flashing visual signal to be constantly illuminated, and switch the corresponding CCTV cameras to the video monitors.
 - d. Communications shall be effected via the intercom system selector switch on the operator console.
 - e. Door control switches located on control panel shall function as defined by security hardware specifications and as specified herein.
 - f. Note: This project is an addition to an existing security network. The new Wonderware projects will be integrated with the existing network. Intercoms, CCTV control and Door control will function the same as the existing Security System functions.

J. Products:

1. General: Products to support the systems described in this Section shall be as defined in each Section of Division 17.

K. Execution:

1. General: It shall be the responsibility of this Contractor to furnish, install, and integrate all systems as defined in Division 17.
2. Submittals shall define the method in which system integration will be accomplished and specifically outline the functions and sequence of activities of the console operator.
3. Division 17 Contractor shall be responsible for providing training by authorized system installers/representatives to the Owner's personnel.

L. Testing:

1. All systems shall be tested individually and as an integrated system prior to acceptance testing of the system(s) by the Owner or Owners representative.

5. NEW MONITORING STATIONS - MONITORING AND CONTROL SYSTEM

A. General Conditions:

1. The Conditions of the Contract (General, Supplementary and other Conditions) and the General Requirements (Sections of Division 1) are hereby made a part of this Section.

B. Work Included:

1. Provide materials, labor, equipment, and services necessary to furnish, deliver, and install two additional Wonderware HMI projects to the existing security monitoring and control system. The new projects will control the doors, intercoms, cameras, etc. as shown on the drawings, as specified herein, and/or as required by job conditions. Additionally, the existing Wonderware HMI projects will have to be edited to coordinate their screens with the new project screens.
2. Major sub-systems include:
 - a. LCD control panel.
 1. Wonderware HMI 7.1 or greater
 2. Licencing of Wonderware provided to Owner
 3. Windows XP Pro operating system
 4. Dell high performance PC

C. Related Work Specified Elsewhere:

1. The work of this Section is related to the work of the following sections:
 - a. General Provisions
 - b. System Description and Integration
 - c. Closed Circuit Television System

D. Reference Specifications, Materials, and/or Codes:

1. National Electrical Code

E. Submittals:

1. General: Submittals shall be made in accordance with the General Provisions (Section 17000) of these specifications.
2. Specific Requirements:
 - a. Submit a listing or catalog cuts for all equipment and devices being furnished under this Section.
 - b. Submit drawings of all control screens to designate colors and icons for each condition.
 - c. Submit electronic files from which each screen may be viewed to reflect selected colors and icons. Software shall be provided to allow Engineer and Owner to review files employing AutoCad 2000 to view the screens.
3. Software Development
 - a. Within one (1) month of receiving the approved shop drawing submittal, the security equipment contractor shall schedule a preliminary meeting with the Owner and Engineer.
 - b. Specific operation and function of the security control system must be determined prior to the preliminary meeting. Extensive analysis outlining all performance of software design and application will be determined and approved at the preliminary meeting.
 - c. The security equipment contractor shall prepare a detailed report, summarizing all software design and function criteria to be delivered to Engineer, owner, and software engineer no later than three (3) weeks from the date of the preliminary meeting. The custom software that runs the security control system shall be designed specifically from this document.

- d. Based on the preliminary meeting, the Division 17 Contractor shall develop the control and display software. The control screens shall be submitted as shop drawings on both paper prints and electronic CAD files.
- e. Any changes or modifications to the system resulting from the shop drawings shall be incorporated into the system and demonstrated at a meeting to finalize the system.
- f. Any modifications to the system resulting from the meeting will be incorporated and demonstrated at the factory testing.

F. General Description:

- 1. The Security Monitoring and Control System is an integrated monitoring and control system which includes a networked Wonderware HMI system and Allen-Bradley programmable logic controllers.
- 2. The Security Monitoring and Control System interfaces directly with the following systems:
 - a. Door Control System
 - b. Closed Circuit Television System
 - c. Dedicated Intercom and General Paging Systems
 - d. Elevator Control

G. Wonderware HMI System Description:

- 1. Screen icon inputs and outputs provide the human interface device for security alarm monitoring and control of security devices including doors, cameras, and intercoms.
- 2. The Dell PC consists of a 21" high resolution color LCD touch screen monitor and high performance processor. The LCD will sit on a freestanding pedestal similar to the existing ones. Coordinate casework opening dimensions and configurations with engineer.
- 3. Control Functions: Wonderware on the personal computer stores the graphic images consisting of icons which performs the function of a typical push button switch. When a particular icon is activated by a pointing device, the personal computer sends the information to the Allen-Bradley Programmable Logic Controller (PLC). The PLC then performs logic functions (such as timing and interlocking) and activates the appropriate field device(s) such as door locks or video switcher control based on the command.
- 4. Monitoring Functions: The PLC receives signals from the field devices, performs the necessary logic functions and routes the required information to the HMI personal computer for display on the LCD terminal.

5. New Monitoring Stations:

- a. 4 existing PODs - one (1) on the second floor POD A, one (1) on the second floor POD B, one (1) on the fourth floor POD C and one (1) on the fourth floor POD D will be controlled by the new Wonderware projects. Doors, intercoms and CCTV switching will be controlled by these new touch screen Wonderware projects.
- b. Each new project must be integrated into the Wonderware Security Network.
- c. The new projects – including the all new CCTV camera - will also be controlled by the Main Control Room HMI projects.

6. Control Transfer: Two methods of control/transfer shall be provided:

- a. Substation Transfer. Activating the appropriate icon on the monitor shall automatically transfer all control and indicating functions to the designated alternate control center (Master Control). No control functions can be initiated from the transferred substation. Return to normal substation operation must be accomplished from the alternate control console (Master Control).
- b. Control "capture" functions exactly as outlined above except that the action is initiated from the alternate control console rather than from the substation itself.

H. Screen Scontrols/Monitoring Functions:

1. General: Control screens shall be comprised of switches and text fields. Switches shall designate and display an icon which provides a pictorial representation of the switches function.
2. Switching Types: Control functions may be affected by selecting a single switch or by selection of a sequence of switches as follows:
 - a. Single switch functions as a momentary type of switch.
 - b. Sequential switch - multiple switch inputs are required to affect a switching function. After selecting the first switch, the switch color and/or icon shall flash to designate that the switch was selected. Each switch in the sequence shall function as described above except when the last switch in the sequence is selected the controlled output or function shall be executed and all selected switches change state to represent the new state condition.
 - c. If a switch in the sequence is not selected within three (3) seconds from the previous switch selection, all switches shall default to the

steady state condition prior to the initiation of the switching sequence.

3. Functions: The screens shall perform the functions described in the plans and specifications. Screen layouts, icons, colors, nomenclature and operator sequences shall be totally customized as directed by the Owner.

I. Icons:

1. Division 17 Contractor shall develop icons which pictorially reflect the function related to a screen display. Icons shall change state to reflect a change of status for the display.
 - a. Icon selection shall be approved by the Owner.
 - b. Note: This project is an addition to an existing security network. Icons similar to the existing Wonderware Security system will be used.

J. Programmable Logic Controller System Description:

1. Programmable Logic Controllers (PLC's) interface with the Wonderware screens to perform all control and alarm logic functions, provides interface to all field inputs and outputs, and downloads alarm data to the Information Management System for alarm data archival and report generation for applications where data is not interfaced directly from the operator terminal.
2. Existing Allen-Bradley Programmable Logic Controllers (PLC) shall provide control and monitoring functions.
3. The controllers shall provide all necessary logic functions, timing functions, memory, software, input/output points and communication capabilities for the operating features required to meet all of the requirements of the four new POD HMI controllers.

K. Pod Control PC System

1. Dell High performance PC with a 21" touch screen Monitor and mouse
 - a. Microsoft Window XP Pro operating system
 - b. Shall include all software, network PC cards, and HUB controllers required for the file server to communicate with the existing Ethernet network.
2. Wonderware HMI version 7.1 or greater
 - a. Configured to collect points from the new PLC.C

- b. Provided with custom designed screens for the new POD Control projects.

L. Allen-Bradley PLC

1. PLC System:

- a. The existing PLC will be re-used. The Div. 17 contractor must edit the PLC logic to operate the the new POD control touch screens and Wonderware HMI software.
 - b. Logic functions shall include but not be limited to AND, OR and INVERT functions with sufficient levels to provide operating features required to perform all of the functions required by the specifications.
 - c. Timing functions shall include, but not be limited to, on-delay, off-delay, stepping and pulsing. Sufficient variations of programmable timing shall be available to provide all the operating features as required by the specifications.
 - d. The PLC shall be programmed using Allen-Bradley logic programming software.
 - e. The contractor must provide all passwords and licences for the Allen-Bradley PLC.
 - f. Documentation must be provided for the logic in the PLC. A hard copy of the ladder logic and a back-up file on CD must be provided. All logic must be commented.
2. The programming format shall be traditional relay ladder logic utilizing basic and advanced instruction sets for function generation.
3. Division 17 Subcontractor shall furnish all programming.
4. Each PLC program shall be furnished to the Owner as follows:
- a. Hard copy printout with comments and symbol names
 - b. Logic program on a CD
 - c. All programs stored on the hard drive of the programming data terminal.
 - d. Licences and passwords for the PLC

M. Execution:

1. Division 17 Subcontractor shall develop software as required to affect the functions of the system as dictated by the drawings and specifications.
 2. Division 17 Subcontractor shall configure equipments with modules as required for the system to support the specific functions or applications.
 3. Division 17 Subcontractor shall provide equipment cabinets (if needed) for installation of the control equipments and cable terminations to the equipments.
 4. Division 17 Subcontractor shall be responsible to ensure that the power source for the PLC and operator terminals is from a UPS unit.
 5. Ensure millwork is adequately ventilated for console mounted equipment. Provide exhaust fans in each console section.
 6. Coordinate all casework requirements with casework contractor.
- N. Completion: Division 17 Subcontractor shall inspect and test the installation and operations of the entire system prior to initiating acceptance tests.
6. MODULAR SCALABLE VIDEO MATRIX SYSTEM
- A. Description: Modular and scalable microprocessor-based video switcher/controller for up to 3200 video inputs and up to 256 video outputs, with the capability for satellite switching systems of up to 38,528 video inputs by 256 video outputs.
- B. Full Integration and Control:
1. The matrix switcher/controller system must provide full integration of video switching and control of camera sites having fixed or variable speed pan/tilts or domes. The integration must be automatic where selection of camera site control must follow video switching.
 2. The matrix switcher/controller system must be completely modular in design, thus providing easy expansion and servicing. The system must be provided prepackaged in any combination of 16 video input and 4 video output increments.
- C. Non-Volatile Memory:
1. All configuration and user programmed information must be held in non-volatile memory to prevent mechanical problems associated with continuous access of information from disc drives and the like.
 2. Retention of all user-programmed information must not be affected by power loss and the system shall "reboot" automatically and function normally upon restoration of power.

3. Start-up shall not require any operator intervention.
- D. Video Switching:
1. This matrix controller/switcher system must be capable of receiving up to 38,528 independent video signals and routing these signals to any of the video outputs. This function must be done without degradation to the quality of the video signal.
- E. Mid-Plate Architecture:
1. The system shall incorporate a mid-plane architecture for connection of system modules. All system modules incorporating active electronics shall be easily removable directly through the front without removing power or disturbing system wiring.
- F. Video Processing:
1. The complete video processing from video input to video output shall provide (be at) a signal gain of unity (within 1.0dB) and a differential phase of 1.5° or less.
 2. All monitor outputs must be AC coupled allowing no DC onto the video output signal. The video signal tilt cannot exceed 0.5 percent.
 3. The circuitry responsible for routing the video signals must have a minimum bandwidth of 17MHz at a signal-to-noise ratio of -65dB.
 4. Using 3.58MHz as the reference, the circuitry responsible for routing the video signals must have crosstalk separation of -55dB between adjacent video channels and separation at the video inputs of -70dB.
- G. Snapshots: The system must be able to store snapshots of important scenes to the network PC upon request.
- H. External Software Compatibility: For programming with an external computer, a Windows® XP or 2000 software platform must be supplied.
1. The software must provide for simplified system setup, archiving, updating and retrieving of system setups to the system.
 2. The set up software must be user-friendly, intuitive and graphical, incorporating symbols and icons.

I. Remote Video Management

1. The matrix switching system shall work with a single remote software program such as Network Client that enables video management from a remote computer.
2. The system shall be compatible with the Network Client Remote Management gaming solution for DVMS recording review. As an essential part of the powerful American Dynamics enterprise surveillance solution, MegaPower 3200 facilitates switching back and forth between live and recorded video using the same analog keyboard and monitor. By integrating with Network Client Remote Management Software, users can achieve important DVR functionality such as camera playback, tours and salvos using the same CCTV keyboard and analog monitor.

J. Password Protection To limit user access to the matrix system, password log-on protection for up to 64 users shall be provided. To increase user flexibility or restriction, eight programmable levels of priority must be provided for each user's password.

K. On-Screen Monitor Display:

1. Each system output must provide field-programmable on-screen display of site number and title, video input number and title, time, date, camera and monitor status.
2. Each on-screen monitor display must provide horizontal and vertical positioning and brightness control ranging from white to black. All characters displayed must be white with black outline to enhance readability.
3. Each system output must be able to turn off camera ID number, title display and time/date. The four-digit camera ID number (pseudo number) must be field programmable regardless of the camera's physical input in to the matrix system.
4. The camera title must consist of a minimum of 16 alphanumeric characters. Field selectable formats of the date display shall be MM/DD/YY, DD/MM/YY or YY/MM/DD.
5. Synchronize time to IP Ethernet Network Time Protocol (NTP) for integration with other network devices.
6. The monitor display shall show the keyboard number or user number in situations where a higher priority keyboard or user has control of a camera or has locked a camera.

L. Communication Ports:

1. The matrix switcher/controller system shall provide 16 RS-232 communication ports for external connection to computers, printers, alarm interface units, recorder interface units, and additional system control keyboards. The use of redundant hot-switched CPUs shall double the RS-232 ports to 32.
2. Each of the ports must provide field programmable baud rates of 1200, 2400, 4800, 9600, 19,200, or 38,400. With optional port expanders, each port must have the ability to expand to four ports, thus providing a total of 128 ports.

M. Macros:

1. The matrix switcher/controller shall respond to at least 1000 macro commands per keyboard, accommodating up to 128,000 macro commands altogether. These user-definable macros shall initiate a combination of pre-defined system commands.
2. The system shall be capable of macro synchronization, whereby a keyboard's set of macro programs can be transferred to similar keyboards.

N. Alarms:

1. The matrix switcher/controller shall support a minimum of 4096 external alarm inputs and provide optional e-mail messaging when an alarm activates.
2. Upon receiving an alarm, the matrix switcher/controller shall also provide field programmable alarm display modes.
 - a. For single monitor alarm display, the selection of alarm modes shall be "auto SEQUENCE mode" or "auto HOLD mode."
 - b. When multi-monitor alarm displays are required, the selection of alarm modes shall be "SEQUENCE and DISPLAY," "BLOCK SEQUENCE" and "BLOCK HOLD."
3. Regardless of the selected display mode, a system operator shall have the ability to hold and sequence alarms by using conventional monitor tour controls. Any and all system outputs must be individually programmable for any display method.
4. A minimum of five user-definable alarm clearance methods must be provided. The five methods shall be:
 - a. ACKNOWLEDGE (manually acknowledged via a system keyboard)

- b. INSTANT AUTOCLEAR (alarm clears when alarm input clears or when manually acknowledged from a system keyboard)
 - c. INSTANT AUTOCLEAR/NO MANUAL ACKNOWLEDGE (alarm clears when alarm input clears only)
 - d. AUTOCLEAR (alarm clears approximately 20 seconds after alarm input clears or when manually acknowledged from a system keyboard)
 - e. AUTOCLEAR/NO MANUAL ACKNOWLEDGE (alarm clears approximately 20 seconds after alarm input clears only)
- 5. During alarm response, the matrix switching system must provide programming for automatic call-up of a camera preset, turn on or off an auxiliary, and provide on-screen text indicating the occurrence of an alarm.
- 6. The system shall provide 128 alarm text messages that can be defined with 25 alarm display/clearance modes, and 16 e-mail messages.
- O. Activity Logging: The system shall have activity logging and reporting to an IP network PC used for setup and file storage.
- P. Tours:
 - 1. The matrix switching system shall support an individual monitor tour (sequence) for each video output. The monitor tour shall consist of up to 64 entries. Each entry may have an associated video input and dwell time.
 - 2. The matrix switching system shall also support up to 64 system tours. Each universal tour shall consist of up to 64 entries. Each entry may have an associated video input, preset, and/or auxiliary action.
 - 3. Video inputs may be included multiple times in the same tour. Alternatively, a salvo or tour can be substituted for the video input number to allow sequences of more than 64 entries.
 - 4. The operator must be able to manually step through the tour, stop the tour or run the tour forward or in reverse.
 - 5. All tour information will reside in non-volatile memory. Tours may also be called automatically via a programmable seven-day timer. A minimum of thirty-five user-programmable time slots, independently programmable for each of seven days, must be provided.

Q. Salvo:

1. The matrix switcher/controller system must be capable of switching up to 16 video inputs to 16 video outputs simultaneously.
2. Up to 64 groups of 16 (with Preset and auxiliary action) shall be provided for programming into a universal tour sequence.
3. Operation of a salvo sequence must have all the features of a standard tour.

R. Partitioning:

1. The matrix switcher/controller system must allow for system partitioning to prevent unauthorized access.
2. Minimum parameters for partitioning shall be keyboard-to-monitor access, camera-to-monitor access, monitor-to-camera access, keyboard-to-camera view access and keyboard-to-camera control access.

S. Camera Site Control

1. The matrix switcher/controller system shall provide a minimum of one 125kbps data port for sending video switching and camera site control code to a code distributor. Code distributors supporting a variety of different electrical interfaces and protocols must be supported.
2. An AD Manchester code distributor shall provide the control data required for up to 4 blocks of up to 64 camera sites and shall be transmitted over a single shielded-twisted pair (STP) of wires for a minimum of 1500 meters (5000 feet). The maximum number of devices that can be “daisy-chained” within the 1500 meters (5000 feet) shall be three.
3. Each code distributor must provide four blocks of 16 independent code outputs.
4. An SEC RS-422 code distributor shall provide the control data required for up to 4 blocks of 99 camera sites and shall be transmitted over a two shielded-twisted pair of wires (STP) for a minimum of 1000 meters (3300 feet). The maximum number of devices that can be “daisy-chained” within the 1000 meters (3300 feet) shall be ten.
5. Each code distributor must provide four blocks of four code outputs.

T. Recorder Control:

1. The matrix switcher/controller system shall provide a minimum of one RS-232 data port for sending control code to a network of recorder

control devices, supporting a variety of different VCRs and digital recorders.

2. The network of analog video recorders may be a mix of Resistive Ladder, RS-232 and IR (Infra Red) devices that are controlled by a singular Recorder Control CPU unit.
3. The matrix switcher/controller system shall integrate with Network Client Remote Management Software and a suitably-equipped keyboard, to directly control important Intellex® digital video management system functions such as play, stop, pause, record, rewind, and fast-forward.

U. Backup CPU: The matrix design shall provide for the option of a dual CPU/CPU “hot switch” configuration. In the event that a CPU malfunction is detected, the “hot switch” must provide an alarm output and automatically transfer control over to the other CPU to ensure no system downtime due to a single malfunction.

V. Video Loss:

1. The matrix switcher/controller system shall provide the option for a video loss detection module for sensing video inputs for video loss detection. Video loss detection can be set for the following conditions:
 - a. Off - Video loss detection not enabled
 - b. Sync - To detect a reduction or loss of the video signal level
 - c. Low - To detect low picture content
 - d. Medium - To detect medium picture content
 - e. High - To detect high picture content
2. This optional feature must be integrated into the video switching bays and must automatically set the appropriate threshold level for video loss detection.
3. The matrix switcher/controller system, upon video loss, must provide a log of changes, and be able to send video loss message to an assigned alarm monitor or e-mail. The minimum information supplied on the port shall be date/time of video loss, camera number that lost video, status of video signal, status of sync, and video loss detection mode.

W. Power:

1. The matrix switcher/controller system must be capable of operating to full specification from an applied voltage of 120Vac ($\pm 10\%$) for the AD2010N and AD2010P, and 100–240Vac (auto-sensing) for the AD2020N and AD2020P at a frequency of 50-60 Hertz. For switcher bays, the power consumption cannot exceed 60 watts per bay with all functions operating.

2. The matrix switcher/controller system must use Flash memory.
 3. The microprocessor-based matrix switcher/controller system shall be an American Dynamics MegaPower CPU or equivalent.
- X. Minimum Performance Specifications: The matrix switcher/controller system must meet the following operating requirements:
1. General: The switcher shall be a microprocessor based integrated Closed Circuit Television (CCTV) full cross-point video matrix switching and control system. The system shall permit remote control operation of motorized pan/tilts and motorized lens devices, domes and recorders.
 2. Video Matrix:
 - a. Standards.....EIA RS-170, NTSC, CCIR and PAL compatible
 - b. Video Input.....BNC, composite video (0.5–2.0Vp-p)
 - c. Video Output..BNC, composite video (1.0Vp-p)
 3. Video Switching:
 - a. Switching Reference - Vertical interval switching or external vertical sync (selectable)
 - b. Vertical Interval Switching - Phase adjustable up to 180° from the phase of AC power supplied to the main bay
 - c. External Input - Vertical sync or composite video, BNC, 1.0–4.0Vp-p
 - d. Switching Speed - <20 milliseconds (typical)
 4. Video Specifications:
 - a. Bandwidth 17MHz
 - b. Frequency Response $\pm 0.5\text{dB}$ to 12MHz
 - c. Signal-to-Noise -65dB
 - d. Crosstalk Adjacent Channel -55dB @ 3.58MHz Input to Input -70 dB @ 3.58MHz
 - e. Differential Phase $<1.5^\circ$
 - f. Differential Gain $<1.0\%$
 - g. Tilt 0.5%
 - h. Gain Unity $\pm 1\text{dB}$
 - i. Return Loss (Input/Output) 40dB
 - j. Differential Delay $\pm 1.0^\circ$
 5. Control Inputs:
 - a. RS-232 Ports Minimum of 16 data ports, expandable to 128 ports

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- b. Baud Rate 1200, 2400, 4800, 9600, 19,200 and 38400 selectable
 - c. Control Switching Keyboard/Receiver: 20 milliseconds
 - d. PC System Software MS Windows graphical user interface software program compatible with Microsoft Windows XP and 2000. Simplified system setup, archiving and retrieval of system data, and uploading and downloading of setup information to the system
- 6. Site Control: Control of fixed or variable speed pan/tilts, motorized zoom lenses, domes, recorders, auxiliary relay outputs and preset program and recall of suitably equipped devices.
- 7. Management Control:
 - a. System Passwords 64 user programmable
 - b. Priority Eight levels
 - Keyboard override
 - Lockout of camera site
 - Access to programming menus
 - c. Partitioning Keyboard to monitor access
 - Keyboard to camera view
 - Keyboard to camera control
 - Camera to monitor access
 - Monitor to camera access
- 8. Tours:
 - a. Individual Monitor Tours - One tour per system output, 64 entries per tour
 - b. Universal System Tours - 64 universal tours, 64 entries per tour, selectable to any system output, cascadeable for sequences greater than 64 cameras.
 - c. Individual Camera Dwell - 1–60 seconds (adjustable) for both Monitor Tours and Universal System Tours
 - d. Salvo (Zone) Tours - Multiple video inputs called to multiple contiguous monitors simultaneously, 64 individual camera groups consisting of 16 cameras each, automatic and manual operation.
 - e. Tour Activation - Automatic 35 user programmable time slots per day, independently programmed for each of seven days
- 9. Macros:
 - a. Initiates a series of user-defined events
 - b. Minimum per Keyboard: 1000

c. Minimum per System: 128,000

10. Monitor Output

Video Outputs AC coupled, zero volts DC
On-Screen Displays Time, Date, Site Number, Site Title, Video Input Number, Video
Input Title, Monitor Status, Camera Status (all titles are 16 characters,
user definable)
Time 24-hour clock
Date Selectable formats MM-DD-YY, DD-MM-YY, YY-MM-DD
Status Alarm, Dwell Time, Hold
Display Format White characters with black outline, height of 9 TVL
Display Position Adjustable for both horizontal and vertical position and brightness
control.
User on/off control of camera number, title and/or date and time

11. Alarms

Alarm Call-up 4096 alarm inputs
Programmable to call any video input or salvo (zone) to monitors
Programmable to initiate any preset or auxiliary output relay
Alarm Display Modes:
Auto Sequence sequences multiple alarms until cleared
Auto Hold displays initial alarm until cleared, queues
subsequent alarms
Sequence and Display Earliest alarm is displayed on one monitor until
cleared, subsequent alarms are sequenced on a
second monitor
Block Auto Sequence Alarms are sequenced on blocks (groups) of monitors; a
block consists of up to 16 contiguous monitors
Block Auto Hold Alarms are displayed on blocks of monitors,
subsequent alarms are queued; multiple blocks may
be defined
Alarm Clearance Modes:
Acknowledge Operator removes alarms manually from a keyboard
Instant Auto Clear Removes alarms when the alarm input clears or when
acknowledged from a system keyboard
Instant Auto Clear/
No Manual
Acknowledgment Removes alarms when the alarm input clears only
Auto Clear Removes alarms approximately 20 seconds after the alarm
input or when acknowledged from a system keyboard
Auto Clear/
No Manual
Acknowledgment Removes alarms approximately 20 seconds after the alarm
input only

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12. Electrical:

Supply Voltage

AD2010N, AD2020N 120Vac ($\pm 10\%$), 50-60Hz

AD2010P, AD2020P 100–240Vac (auto-sensing), 50-60Hz

Power Requirements:

Switching Bays 60 watts maximum per bay (with 16 modules)

MPCPU 18 watts

13. Mechanical:

Mounting Designed for EIA-310-D and IEC 60297-1 standard 482.6mm (19in) electronic racks

Dimensions (H \times W \times D):

Switcher Bays 267 \times 483 \times 470mm (10.5 \times 19 \times 18.5in)

MPCPU 44.5 \times 481.6 \times 304.8mm (1.75 \times 19 \times 12in)

Weight:

Switcher Bays 28kg (60 lbs) (with 16 modules)

MPCPU 4.5kg (10 lbs)

14. Environmental:

Operating Temperature 0°C to 50°C (32°F to 122°F)

Relative Humidity 0 to 95% non-condensing

15. Regulatory:

MegaPower CPU

Safety Approvals: UL60950-1 Information Technology Equipment
CSA 22.2 60950-1 Information Technology Equipment
EN60950 Information Technology Equipment*

Emissions: FCC: 47 CFR, Part 15 Subpart B, Class A
ICES-003 Interference Causing Equipment Standard
EN55022, class B, Conducted and Radiated Emissions*
EN61000-3-2 Power Line Harmonics Test
EN61000-3-3 Power Line Flicker Test

AS/NZS 3548, Class A, Australian Standard/New Zealand Standard

CISPR 22, International Special Committee on Radio Interference (Comite International Special Des Perturbations Radioelectriques)

Immunity: EN50130-4 Immunity Requirements for Components of Fire, Intruder, and Social Alarm Systems*

- EN50130-4 Mains Supply Voltage Variations

- IEC1000-4-11 Mains Supply Voltage Dips and Shorts

- IEC1000-4-2 ESD

- IEC1000-4-3 Radiated Field

- ENV50141 Conducted Disturbances
- IEC1000-4-4 Electrical Fast Transient Burst Immunity
- IEC1000-4-5 Slow High Energy Voltage Surge

*CE mark and Declaration of Conformity

MegaPower Switching Bays AD2010, AD2020

Emissions	FCC Part 15, subpart B, Class A EN55022 Class B (CE)
Immunity	EN50130-4 (CE)
Safety	UL2044 (AD2010N, AD2020N) EN60950-1 (CE)

7. GENERATOR/DISTRIBUTOR FOR MANCHESTER CONTROL CODE OR RS-232 CODE

- A. The generator/distributor must be capable of receiving from the matrix switcher/controller CPU, High Speed Data which provides video switching and camera site control data for up to 1024 camera sites. The generator/distributor must provide BNC connections for receiving and looping the High Speed Data. The High Speed Data OUT BNC connection must be terminated with a 75 Ω BNC terminator for end runs of the High Speed Data. Two sets of BNC connections shall be provided for systems that contain more than 64 monitors or in applications using more than one CPU. The High Speed Data must be transmitted over a good grade RG-59 video cable. The generator/distributor must convert this High Speed Data into either Manchester Code or RS-232 both with American Dynamics protocol.
- B. Manchester Code shall be provided via 64 independent buffered outputs in four groups of 16. Each group shall be capable of controlling separate blocks of up to 64 camera sites and set via rear panel DIP switches. The Manchester code must provide all control data required for the camera site and shall be transmitted over an 18 AWG, shielded-twisted pair of wires at an impedance of 120 ohms. Based on Belden 8760 or equivalent cable, the maximum distance from the code output to the last receiver/dome shall be 1525 meters (5000 feet). The maximum number of receivers/domes that can be “daisy-chained” within the 1525 meters (5000 feet) shall be three.
- C. RS-232 shall be provided via an 8-pin modular RJ-45 connector that is connected to a terminal box. The baud rate of the RS-232 code shall be selectable at 1200, 2400, 4800, or 9600 baud. The RS-232 code must provide all control data required for the camera site and shall be transmitted over a three wire, 18 AWG, shielded-wire. Based on Belden 8770 or equivalent, the maximum distance from the terminal box to the receiver/dome shall be 330 meters (1083 feet).
- D. The generator/distributor must provide a selection for filtering out variable speed control words on the Manchester or RS-232 code.

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- E. For ease of installation and troubleshooting, visual LED indicators are required for confirmation of power and High Speed Data for each BNC input. The visual indicators for each High Speed Data connection will only light when correct code is received.
- F. The code generator/distributor shall be an American Dynamics AD2091 series or equivalent.
- G. The generator/distributor must meet the following operating requirements:

1. Operational

High Speed Data connections:

Code 1: In (BNC)/Out (BNC)

Code 2: In (BNC)/Out (BNC)

Manchester code connections: Four groups of four, 12-conductor connectors providing 64 sets of black, white and shield connections

Manchester code information: Control of up to 1024 pan/tilts or domes selectable in control blocks of 64

RS-232 code connections: 8-pin modular RJ-45 jack with terminal box

RS-232 code information: Control of up to 1024 pan/tilts or domes—1200, 2400, 4800 or 9600 baud selectable

2. Electrical

Supply Voltage:

D2091: 120 VAC (50/60 Hz)

DS2091X: 230 VAC (50/60 Hz)

Power Requirements: 8 watts

3. Mechanical

Mounting: 19-inch EIA rack mount or desktop

Dimensions (H × W × D):

Rack Mount: 96 × 483 × 331 mm (3.5 × 19 × 13 in)

Desktop: 96 × 432 × 331 mm (3.5 × 17 × 13 in)

Weight: 3.1 kg (7 lbs)

4. Environmental

Operating Temperature: 0–40°C (32–104°F)

Relative Humidity: 98% (non-condensing)

5. Regulatory

Emissions:

AD2091:	FCC Part 15, subpart B, Class A
ADS2091X:	FCC Part 15, subpart B, Class A; EN55022 Class B (CE)

Immunity:

ADS2091X:	EN50082-1
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Safety:

AD2091:	UL2044
ADS2091X:	EN60950

8. CODE DISTRIBUTOR FOR CONTROL OF AMERICAN DYNAMICS RS-422 DOMES

- A. The code distributor shall provide a minimum of 16 RS-422 outputs, configured in groups of four. Each group must be independent of one another and provide a means for setting blocks of address ranges without accessing internal switches or jumpers. Each group shall provide all of the camera site information, including pan, tilt, focus, iris, zoom and auxiliary information, for up to 99 camera sites and conform to American Dynamics RS-422 protocol.
- B. Each output must be capable of transmitting and receiving over two, 22 gauge shielded twisted pairs (STP) of conductors up to 10 domes in a daisy-chain configuration. The total distance from the code distributor to the last dome in a daisy-chain shall be at least 1000 meters (3280 feet). In addition, each group must be capable of connection to full duplex RS-422 fiber optic transceivers.
- C. The input to the code distributor shall be provided by any one of a variety of matrix switcher/controller systems and be either a 125 kbps high-speed data or an AD Manchester control code output. For ease-of-connection, a looping pair of BNC connectors shall be provided for the high-speed data line and a removable “euro-style” terminal strip for the AD Manchester control code line.
- D. The code distributor shall provide quick-connect screw terminals and diagnostic LEDs facilitate efficient installation and service. The LEDs shall provide visual indicators for confirmation of power, alarm, and control code status. The code distributor shall be capable of mounting to the front or rear of equipment racks, or flat on a wall or horizontal surface.
- E. The code distributor shall be capable of receiving up to four alarms from each remote dome. Receipt of such, shall be from the same two shielded twisted pairs that are utilized for transmitting and receiving camera site information. No additional cabling from the domes shall be required. The code distributor shall be capable of transmitting the dome alarm information in simple ASCII format with a 1200, 2400, 4800, or 9600-baud selective baud rate to a matrix switcher/controller system via an RS-232 output. The code distributor shall provide Form C relay outputs and an Alarm LED that activate when an alarm input is active on any dome connected via the respective code distributor.

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- F. An RS-232 input shall also be provided for cascading multiple code distributors and/or alarm interface units. For ease-of-connection, a pair of 8-pin modular RJ-45 connectors and associated cables shall be provided. The RS-232 output shall be compatible with three wire, 18 AWG, shielded-wire for a distance of up to 300 meters (1000 feet).
- G. The code distributor shall be capable of storing up to 16 presets for suitably equipped SpeedDome Ultra or SpeedDome Optima programmable camera domes.
- H. The code distributor shall be an American Dynamics AD2083-02B (120 VAC), ADS2083-02B-1 (230 VAC) or equivalent.
- I. The code distributor must meet the following operating requirements:

1. Operational

Dome outputs: 16 RS-422 total, four independent groups of four connectors
Address Ranges: 11 blocks of 99, maximum address 1024
Presets: Stores up to 16 presets per suitably equipped SpeedDome Ultra or SpeedDome Optima dome
Dome Alarms: Up to four (on suitably-equipped domes transmitted over dome data cabling) transmitted at 1200, 2400, 4800, or 9600 baud
Alarm Output: RS-232 via RJ-45 direct connection to system CPU
Alarm Indication: LED and Form-C relay outputs
Diagnostic LEDs: Power, alarm and control code status

2. Connectors

High Speed Data Line: BNC, in/out
Manchester Control Code: One 12-pin removable "euro style" screw terminal strip for black, white and shield connection
RS-422: Eight 12-pin removable "euro-style" screw terminals strips
Four groups of four, with +, - and ground connections of transmit and receive
RS-232: RJ-45 in/out, cascable
Two, 8-pin modular
Alarm output: Form C outputs

3. Electrical

Supply Voltage:
AD2083-02B: 120 VAC (50/60 Hz)
ADS2083-02B-1: 230 VAC (50/60 Hz)

Power Consumption: 8 watts (nominal)

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4. Mechanical

Dimensions (H × W × D): 89 × 483 × 203 mm
(3.5 × 19 × 8 in)
Unit Weight: 3.2 kg (7 lbs)
Shipping Weight: 4.1 kg (9.1 lbs)
Color: Black
Mounting: Universal wall, surface, and rack (19-inch EIA)

5. Environmental

Operating Temperature: 0 °C to 40 °C (32 °F to 104 °F)
Storage Temperature: -40 °C to 70 °C (-40 °F to 155 °F)
Humidity: 98% RH (non-condensing)

6. Regulatory

Emissions FCC Part 15, Subpart B Class A
CE: EN55022 Class B
Immunity: CE: EN50082-1
Safety: UL2044
cUL: CSA C22.2 No. 1-94
CE: EN60950

9. INTELLEX ULTRA DIGITAL VIDEO MANAGEMENT SYSTEMS

A. Description:

1. The Intellex Ultra Premier Digital Video Management System shall be microprocessor-based, operate on and use the security of the Microsoft® Windows XP Professional operating system.
2. The unit shall combine multiplexing, alarm/event detection, video, audio and text recording. The unit must simultaneously record, play back and archive video, text and audio while using sophisticated search functions to define and find only those important events that meet certain criteria.

- B. The Intellex Ultra Digital Video Management System running on Intellex v4.1 software must meet the following minimum features, functions and specifications.
- C. The Digital Video Management System and its components shall be thoroughly tested before shipping from the manufacturer's facility.
- D. The Digital Video Management System shall be designed specifically for the video security industry, utilizing a patented proprietary compression scheme called Active Content Compression (ACC) that differentiates motion from video noise. This scheme allows images to be compressed into a file that is 1/9 the size of what they would be if compressed with MPEG-4 images, using far less disk

space. Motion JPEG and MPEG-4, or any variation thereof, are not acceptable alternatives.

- E. The Digital Video Management System's proprietary compression scheme, ACC, must perform between 25% and 200% better than MPEG-4, and between 30% and 3700% better than M-JPEG and Wavelet. The manufacturer must offer a "white paper" on their public website detailing the performance testing used to develop these statistics.
- F. Digital Video Management System shall be capable of recording greater than 32 days on 1.6 TB of internal hard drive storage using the following parameters:
 - 1. Resolution – 2CIF
 - 2. Video Mode – NTSC
 - 3. Quality – Normal
 - 4. Sensitivity – Normal
 - 5. Aggregate Record Rate – 480 ips
 - 6. Number of Cameras – 16
 - 7. Record Audio – On
 - 8. Motion – Casual (For example, a room or hallway with a couple of occupants or fairly frequent traffic; a sidewalk or street with some traffic and little motion due to wind, light, or camera noise)
- G. The Digital Video Management System shall, at a minimum, combine multiplexing, alarm detection, event detection, video, audio (Premier Edition only), and text (Premier Edition only) recording.
- H. The Digital Video Management System manufacturer shall include on their public website a minimum of the following tools, directly related to the support of the DVMS system:
 - 1. Knowledge Base Articles
 - 2. Application Solutions
 - 3. Virtual Product Demos
 - 4. Digital Demo Network
 - 5. Software Downloads
 - 6. Software Registration
 - 7. Training Information and Registration
 - 8. Record Duration Calculator
 - 9. Incident
 - 10. Download Calculator
 - 11. Live Video Download Calculator
- I. The Digital Video Management System must utilize a chassis no larger than three rack units in height, and be suitable for either desktop or rack mount installations. The unit must fit within a standard video rack as well as a server rack.

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- J. The Digital Video Management System's chassis shall include three indicator lights easily viewed from the front panel. These indicator lights must be colored red, yellow, and green to signify system status.
- K. The Digital Video Management System's chassis shall incorporate a minimum of four front accessible, swappable drive bays. The bays must be behind a locking front cover that restricts access not only to the drives, but also to the power switch and reset switch.
- L. The Digital Video Management System's operating system and application must be installed on a separate solid-state system drive (flash memory card), with no moving parts to wear out or fail, dramatically reducing the risk of system failure. Units with the operating system and/or application installed on a hard drive are not acceptable.
- M. The Digital Video Management System's Operating System (OS) shall be Microsoft Windows XP Professional to provide increased reliability, security, and performance.
- N. The Digital Video Management System shall use record mode settings linear or circular/continuous.
- O. The Digital Video Management System shall provide for simultaneous recording, playback, transmitting, database searching and archiving. One channel of audio and up to sixteen text inputs shall be supported with required hardware properly installed and set up according to manufacturer's instructions. Live audio shall be available for listening while viewing live video. Up to 15 cameras shall be configurable as visible or covert by the authorized user.
- P. The Digital Video Management System shall provide network access through two internal network connections that support 1 GB network operation.
- Q. The Digital Video Management System shall be MSI compliant, enabling administrators to provide better corporate deployment, and provide a standard format for component management.
- R. The Digital Video Management System's user interface must be easy to use, allowing the user to access all operations using one-click buttons, pull-down menus, adjustable sliders, and tabbed screens.
- S. The unit must simultaneously record, play back and archive video, text and audio while using sophisticated search functions to define and find only those important events that meet certain criteria. The system must also have the ability to host multiple remote users, archive data, and search for data, all while recording multiple video and text streams.
- T. The Digital Video Management System shall include the ability to accept text through a network connection, as well as through a serial input with an RS-232 connection. The unit shall be able to mix serial inputs and TCP/IP inputs in any combination up to 16 channels of text.

- U. The user must have the ability to specify text criteria, such as a specific ASCII text stream, to schedule recording and search for video, allowing for recording only the video associated with the specified text.
- V. The Digital Video Management System's live video display must provide real-time motion in any screen format (full, 2x2, 3x3, and 4x4). The operator shall have the ability to expand any view to full screen with a single click of the mouse.
- W. The Digital Video Management System shall offer recording rates of up to 480 ips at 1CIF, 480 ips at 2CIF, and 240 ips at 4CIF. The unit shall be able to mix record speeds and quality settings on a "per camera" basis.
- X. The Digital Video Management System shall have the ability to capture critical information with higher frame rates for certain cameras, and assign the remainder of the available images per second (ips) to non-critical cameras.
- Y. The Digital Video Management System shall use auto rate mode to set equal frame rates for each camera or adjust the recording frame rate per camera to give greater continuity in critical areas.
- Z. The Digital Video Management System shall be available with up to 2.0 TB of internal hard drive storage. A RAID 5 version shall be available with up to 1.5 TB of internal hard drive storage.
- AA. The Digital Video Management System must incorporate Self-Monitoring Analysis and Reporting Technology (S.M.A.R.T.), incorporating a suite of advanced diagnostics that monitor the internal operation of a drive and provide early warning for many types of potential problems. This shall allow for the drive to be repaired or replaced before any data is lost or damaged.
- AB. Using the integrated CD/DVD writer (CD-RW or DVD-RW), the Digital Video Management System shall allow users to save video, audio, and text to a standard recordable CD or DVD. The option to include the player software on the CD or DVD shall be available so that no additional software needs to be purchased. The unit must include the ability to export the latest video, audio, and text to a CD or DVD until the CD or DVD is full.
- AC. The Digital Video Management System shall allow for the following Alarm Recording settings:
 - 1. Image Rate
 - 2. Quality
 - 3. Sensitivity
- AD. The Digital Video Management System shall incorporate an adjustable alarm duration with the pre-alarm and minimum alarm duration programmable from

five seconds to five minutes. The units must also allow programmable recording times (alarm schedules) for each day of the week, in thirty minute increments.

- AE. The Digital Video Management System must work with the following dome camera handlers: AD168, MP48, AD1024 matrix, VM96RTT, RS422 Dome Control, VM16/ADTT16, VM16E/ADTT16E, Pelco Matrix Switch (models 6700, 6800, 8500, 9500, 9750 or 9760) and USB-CCTV.
- AF. The Digital Video Management System must include alarm-triggered dome events, allowing the operator to configure domes to respond to alarm conditions via Network Client™ or Intellex GUI (using supported dome control handlers). The event can be a motion filter (motion detection, perimeter protection, light change and motion exception), a wired alarm, video loss, or a manually generated alarm. The unit must have the ability to move a single dome, or multiple domes, to preset positions or patterns. This feature must be supported by the dome.
- AG. The Digital Video Management System shall incorporate full programming and control of American Dynamics “SpeedDome Ultra” series domes via a USB to Sensornet converter directly connected to the unit’s USB port. This also includes Touch Tracker ADTT16E, ADTT16 (everything except through Pelco switch) with limitations.
- AH. The Digital Video Management System must include the ability to send an email via an email server to anyone, or any group, based upon an event. The events must include, but not necessarily limited to, the following:
 - 1. System Event
 - 2. Video Loss
 - 3. Generated Alarm
 - 4. Any Filter Alarm
 - 5. Any Input Alarm
 - 6. Individual Camera Alarm
- AI. The Digital Video Management System’s recording format must give each image a unique identification “stamp”. Even though the file structure is PC compatible, the original video images can not be altered or modified, enabling a solid chain of evidence.
- AJ. The Digital Video Management System shall easily integrate with third party software application using an Application Programmers Interface (API). The manufacturer of the unit shall offer a Software Developers Kit (SDK) to select third party manufactures, in addition to sample modular programs with their source codes in both Visual Basic and Visual C++, allowing programmers to develop their own software to control the unit’s functions.
- AK. The Digital Video Management System’s API must be backwards compatible with previous versions of the software equal to or greater than v2.6.

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- AL. In order to instantly retrieve recorded video of any event, the Digital Video Management System shall use a patented search feature to filter through hours of video to find only the essential events. The operator must have the ability to isolate video containing motion, and find video where perimeters were crossed, lights were turned on or off, alarms were triggered, and numerous additional scenarios.
- AM. In addition to the standard motion based mode, using advanced video analysis tools, the Digital Video Management System shall enable the user to schedule recording and search for video if the movement of an object meets specified size, speed, direction and Motion Exception criteria.
- AN. The Digital Video Management System shall include the ability to configure up to 15 cameras for “covert” operation, restricting their use to only those who are authorized.
- AO. To provide for more effective security management, the Digital Video Management System must also allow for audits of the activity log to monitor changes to the settings and configurations. The activity log shall include, but not necessarily be limited to, the following information:
 - 1. User Name – Login name of the user
 - 2. Date/Time – Date and Time the action was performed
 - 3. Access Loc – Whether the action was local to the unit or done through remote software
 - 4. Category – The actions category
 - 5. Activity – The action performed within the category
 - 6. Data – Description of the action
- AP. The operator shall have the ability to export the entire log file, export the displayed log file, print the log file, or print the displayed log file locally and remotely through Network Client v4.x software.
- AQ. The Digital Video Management System shall be compatible with the leading brands of anti-virus software in order to detect and deactivate malicious software that may attempt to attack the system.
- AR. The Digital Video Management System shall be able to optionally archive up to 160 GB of video to external Super Digital Linear Transform Tapes (SDLT 320), using half-inch linear recording in a single hub cartridge.
- AS. The Digital Video Management System shall be able to store recorded video on the RAID Storage System (RSS) via an iSCSI interface.
- AT. The Digital Video Management System shall be able to manage storage of video, audio and text by exporting to Network Attached Storage (NAS), Storage Area Network (SAN) and Direct Attached Storage (DAS) devices using optional software.

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- AU. The option to set up the Digital Video Management System in advanced security mode shall enable both IT and security managers to collectively integrate the unit into existing Microsoft Windows networks without compromising the existing security protocols. This requires optional Policy Manager v1.2 software.
- AV. The Digital Video Management System must include support for Remote Configuration and Management software to allow a user to remotely configure the unit, view live video, or select video segments by time, date, alarm, or search results. The operator must have the ability to save, annotate, and organize copied video into “incident folders” to aid with investigations.
- AW. The remote management software must allow for up to 64 live video sessions, allowing the operator to view up to sixty four different cameras, from up to 64 different remote sites, simultaneously.
- AX. The remote management software shall also allow the exporting of video clips to an .avi file to play on any Microsoft Windows based PC. The software shall have the ability to enhance, print, or convert the individual images to standard formats.
- AY. The remote management software shall allow an operator to select units, cameras, and timeframes for automatic retrieval of video clips to an operators PC. This allows for downloads to be scheduled during times that network traffic restrictions are not an issue.
- AZ. The Digital Video Management System shall incorporate playback and multi-screen playback functionality to allow the user to locate and select a single stored image to be enhanced using tools. The tools shall include, but not necessarily be limited to, the following:
 - 1. Brightness
 - 2. Contrast
 - 3. Hue
 - 4. Saturation
 - 5. Lightness
 - 6. Balance Light
 - 7. Edge Detect
 - 8. Enhance Light
 - 9. Noise Reduction
 - 10. Sharpen
 - 11. Sharpen More
 - 12. Smooth
 - 13. Smooth More
 - 14. Brightness Chart
- BA. A browser-based viewer (Browser Client) must also be available free of charge, enabling users to host and customize their own website to provide live viewing of the Digital Video Management System through a standard browser interface.

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Multiple viewers shall have the ability to access video and control domes remotely.

BB. The Digital Video Management System shall be the American Dynamics Intellex Ultra Series.

BC. Intellex Ultra Model Numbers:

ADD600ULP050	Intellex Ultra, 500GB native storage space, Intellex v4.1 software, Premier package, PAL/NTSC
ADD600ULP100	Intellex Ultra, 1.0 TB native storage space, Intellex v4.1 software, Premier package, PAL/ NTSC
ADD600ULP150	Intellex Ultra, 1.5 TB native storage space, Intellex v4.1 software, Premier package, PAL /NTSC
ADD600ULP200	Intellex Ultra, 2.0 TB native storage space, Intellex v4.1 software, Premier package, PAL/NTSC
ADD600URP150	Intellex Ultra, 1.5 TB native storage space, 500G dedicated RAID drives, Intellex v4.1 software, RAID Package, PAL,/NTSC, [Premier Package plus RAID 5]

BD. Minimum Performance Specification: The Intellex Ultra Digital Video Management System running Intellex v4.1 software must meet the following minimum mechanical specifications:

1. Power Supply

Input 100-240 VAC, 50/60 Hz, 3.0/1.5A

2. Physical Characteristics: Rack Mount Chassis Version

Unit Dimensions (HxWxD) 130 mm (5.125") High
429 mm (16.895") Wide
546 mm (21.5") Deep

Rack Height Three (3) units

Unit Weight 17.3 kg. (38 lbs.)

Shipping Weight 25 kg. (55 lbs.)

3. Physical Characteristics: Desktop Chassis Version

Unit Dimensions (HxWxD)	130 mm (5.125") High 429 mm (16.895") Wide 546 mm (21.5") Deep
Unit Weight	17.3 kg. (38 lbs.)
Shipping Weight	25 kg. (55 lbs.)

4. Environmental Requirements

Operating Temperature	5° to 35° C (41° to 95° F)
Storage Temperature	-10° to 60° C (14° to 140° F)
Humidity	5%-95% RH non-condensing
Operating Altitude	3,048 m (10,000 ft)

5. Regulatory

Emissions	FCC 15b, Class B EN55022 (1995) Class A EN61000-3-2 (1995) EN61000-3-3 (1995)
Immunity	EN50130-4 (1996)
Safety	UL 60950-1 EN 60950-1:2001+A11

10. NETWORK CLIENT REMOTE MANAGEMENT SOFTWARE

- A. The Network Client v4.1 software accessory shall be a tool for retrieving and viewing live or recorded video images from one or more Intellex Digital Video Management Systems (DVMS). These images shall be transmitted over a TCP/IP wide area network (WAN), local area network (LAN), Internet, or a dial-up modem. The accessory shall be available as a software package to be installed on a high performance desktop computer equipped with integrated central processing unit, keyboard, mouse, Microsoft Windows 2000, Microsoft Windows NT 4.0, or Microsoft Windows XP Professional operating system and monitor. The software can operate on common-off-the-shelf PC equipment. The desktop computer shall be purchased separately, according to the specifications in this document.
- B. The software accessory shall function as a retrieval device on a network to which one or more Intellex units are connected. The software accessory shall be capable of displaying live video from up to 16 remote locations on one display screen.
- C. The software accessory shall be capable of displaying up to 64 cameras when additional live views are opened. It shall be capable of storing downloaded video segments in a local video database on the user's computer.

- D. The software accessory shall also be capable of displaying locally stored video from up to 4 separate incidents, possibly downloaded from different Intellex units, on one screen. The software accessory shall be capable of downloading and storing multi-camera video from an Intellex unit database in one video incident in the local video database.
- E. The software shall provide status information on Intellex units connected to the network. It shall provide for viewing live video and retrieval of alarm lists, user-selected video segments, image playback, image enhancement, audio and text playback, and search by text string. The software accessory shall enable full-screen viewing for live video. It shall also provide a toggle button for switching between multi-pane and single-pane video viewing. Intellex shall provide video analysis tools to schedule cameras to record and specify search criteria based on type of motion (size, speed, direction and exception).
- F. The software accessory shall allow the operator to export selected saved video clips of downloaded video. These clips shall be available in proprietary or .avi format. Operator shall be permitted to move a video clip to another location, e.g., e-mail the clip.
- G. The software accessory shall provide camera grouping for viewing the video of one or more Intellex units for easy relocation on screen. Live or recorded video shall be viewable simultaneously from multiple cameras on one or more remote units. Saved downloaded video shall be accessible for playback from one or more cameras with audio and text information.
- H. The software accessory shall enable the operator to schedule recording of camera video. It shall allow remote configuration of cameras, security, archiving, recording mode, alarms, display modes, audio, text, and camera record frame rate.
- I. The software accessory shall provide for storing and managing downloaded video in a Windows Explorer-like component sorted within categories. It shall also provide for master timekeeping for Intellex units and Network Client computers on the network and allow secure access to the Intellex setup menu for system configuration changes. The software accessory shall provide for control of one or more dome cameras via an optional manufacturer-specific camera control device connected to a remote Intellex unit.
- J. The software accessory shall provide a network bandwidth limiter, or throttle, that enables an authorized user to adjust the maximum bandwidth used to download and view live video. Based on the bandwidth throttle, the Intellex shall adjust the speed and amount of information transferred over the network. The software accessory shall enable the user to set the bandwidth throttle anywhere from 10 Kbps to 10 Mbps.
- K. The software accessory shall receive alarm notification and log all alarm events, including those in progress. Video retrieval of events via the event log shall be available. Remote alarm generation shall be available to mark events of interest.

The remote work station is able to receive alarm notification whether or not the software accessory is running.

- L. The software accessory shall log and display activity occurring on the Intellex unit for specified time periods. When viewed, the log shall indicate user activity on the Intellex unit, including logons and exits, who changed a camera name, recording schedule or recording rate, and who exported to CD.
- M. The Network Client shall optionally operate like a virtual matrix with CCTV keyboard-based camera control and an expanded capacity to view video simultaneously from multiple cameras.
- N. The Network Client shall have the ability to view live video from up to 64 cameras simultaneously and send and receive alarm notifications.
- O. The Network Client shall optionally have the functionality of a virtual matrix using the CCTV keyboard-based control option.
- P. The Network Client shall have the ability to consolidate all cameras and domes in one pseudo-numbering group with a single consecutive numbering system.
- Q. The Network Client shall have the ability to simulate a wall of monitors on a single screen.
- R. The software accessory shall consist of a CD-ROM disk containing the software application and product documentation.
- S. Printer output may optionally be available through a parallel port on the rear panel of the computer.
- T. The software accessory shall be configured so that the on-screen information may be displayed in a local language. This language shall be defined during installation.
- U. The software shall be available on common-off-the-shelf PC equipment, meeting minimum specifications.
- V. Data entered by an operator, such as a folder name, shall be displayed in the language used for entering the data. Messages generated by the software device shall appear in a local language.
- W. The software device shall support a local date format configured in the Windows operating system.
- X. The main screen shall contain the controls and indicators for normal operation as well as access to all other system functions.
 - 1. Program menus shall provide access to functions such as database, category and incident management, display of video information, display

- of toolbar and status bar, alarm and video retrieval, refresh instruments, instrument status, instrument setup, bandwidth configuration, live video display, time synchronization, display configuration, remote instruments, communication ports, live camera defaults, image enhancement, status retrieval, video search criteria, export of video images and on-line help.
 - 2. A toolbar shall provide easy-to-use point and select icons that access commonly used functions for both live video and playback video displays.
 - 3. Saved incidents and incident categories shall be visible in a directory tree on the left side of the main display. Pop-up menus for administering these incidents and categories shall be accessible using the right mouse button. Selecting an incident from a category shall enable the playback screen, functions and toolbar.
 - 4. User annotations to incidents shall be visible and editable in a pane accessed with a left mouse click to the notes tab when the incident is selected. A pop-up menu for editing annotations shall be accessible using the right mouse button.
 - 5. Intellex instruments and attached cameras that are active on the network shall be visible in a directory tree on the left-hand side of the display Pop-up menus. Administering these instruments and their cameras shall be accessible using the right mouse button. Selecting an instrument shall enable the Status Option, Unit Setup Option, Live Display Option and other related options, displaying the instruments properties and enabling the live functions and toolbar.
- Y. The software accessory shall provide menu features to manage and maintain the database of stored incidents other than those stored on the Intellex instruments.
- 1. A menu feature shall provide for creating, renaming and deleting databases.
 - 2. A menu feature shall provide for creating, renaming, deleting and moving incidents within the database.
 - 3. A menu feature shall provide for moving, deleting, renaming and exporting incidents.
 - 4. A menu feature shall provide for exiting the program.
- Z. The software accessory shall provide menu features that allow the user to display or hide screen items.
- 1. A menu feature shall display or hide the toolbar.
 - 2. A menu feature shall display or hide the status bar.

3. A menu feature shall display or hide Overlay Video Information for currently displayed live or recorded video.
- AA. The software accessory shall provide menu features to activate functions of the device.
1. A menu feature shall provide for retrieving alarms by instrument, cameras, time and date.
 2. A menu feature shall provide for retrieving video by instrument, camera, time and date with or without text and/or audio information.
 3. A menu feature shall provide for refreshing communications to those remote instruments listed in the remote instruments setup list.
 4. A menu feature shall provide for retrieving an instrument status when an instrument is selected.
 5. A menu feature shall provide for displaying of live video when an instrument is selected.
- AB. The software accessory shall provide menu features to configure the device.
1. A menu feature shall provide a complete list of settings and functions for each Intellex that can be remotely configured based on each remote user's access PIN. Functions include schedule setup, motion detection filter setup, images per second (ips), resolution setup, gain control setup, camera name and setup, storage, archive schedule, alarm setup, and frame rate control.
 2. A menu feature shall provide for automatic frame rate selection or per camera frame rate selection. Auto rate mode shall enable all cameras to receive equal amounts of the total record rate capacity. Per camera frame rate mode shall allow the user to select the rate for each connected camera, with no individual camera able to record faster than 30 ips.
 3. A menu feature shall provide for master timekeeping for all Intellex instruments and associated software devices on the network. If any messages are returned, they shall be displayed.
 4. A menu feature shall allow the operator to set the display configuration.
 5. A menu feature shall allow the operator to access the remote instruments setup list, where instruments can be added, deleted and edited by their name, IP address, communication ports and type.
 6. A menu feature shall provide for editing the device communication port.

7. A menu feature shall provide for setting the default live camera settings, by image quality and motion sensitivity.
 8. A menu feature shall provide for enabling or disabling a specific bandwidth throttle. The throttle shall determine the amount of information that can be downloaded and the download speed. This password-protected feature shall permit the user to enable a specific throttle in Kbps or Mbps. The bandwidth throttle value shall allow values in the range of 10 Kbps to 10 Mbps.
- AC. The software accessory shall provide menu features for information about the program.
1. A menu feature shall provide access to help topics, which define the functions and operation of the program.
 2. A menu feature shall provide access to the version of the program.
- AD. The software accessory shall communicate with Intellex and associated software devices over a wide area, local area or dialup TCP/IP network, or using the Internet, if there is an ISP.
1. The software accessory shall have the ability to connect with any, or all Intellex units connected to the network on demand.
 2. A status bar shall indicate the number of Intellex instruments that are available to the accessory over the network.
 3. The user shall be able to access the status, setup and video of any Intellex unit on the network, depending upon security setup and access permissions.
 4. The user shall be able to list the Intellex instruments and define the communication parameters, including instrument name IP address, and communication ports.
 5. The accessory shall provide an automatic daily timekeeping function to synchronize the time on all Intellex and associated software devices on the network.
 6. Retrieving text or audio from Intellex units only available with 2.4 version software installed on each unit.
 7. Dome control only available with Intellex version 2.3 software or higher.
- AE. The software accessory shall provide for remote dome control.
1. The user shall be able to pan, tilt, and zoom the dome remotely.

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2. The user shall be able to adjust the focus and iris of the camera remotely.
 3. The user shall be able to call preset positions and run set patterns remotely.
 4. Remote dome control is only available with Intellex v2.3 software or higher.
 5. The software accessory shall provide for retrieval of live video from any Intellex (V2.1L) instrument active on the network.
 6. The user shall be able to select the instrument and display live video in a single window or a window divided into 2×2, 3×3 or 4×4 window panes.
 7. The live 2×2, 3×3 or 4×4 window panes can display live video from any camera on any instrument that is active and on the network.
 8. The user shall be able to name and save different camera window displays via a Configurations pull-down list. Names shall be a minimum of 32 characters long. The software accessory shall be capable of saving up to 32,000 different named display configurations.
 9. Each live window pane shall have a popup menu, available via right mouse click, to access the settings for the pane, including the quality and sensitivity settings.
- AF. The software accessory shall provide for control of dome camera functions for one or more cameras so equipped connected to a remote Intellex (v 2.3L) instrument active on the network.
1. The user shall be able to control pan/tilt movement, iris open/close, focus near/far, and zoom in/out functions on a dome camera with these features through a transparent control diagram overlay on the live video display of the associated camera.
 2. The user shall be able to activate 1 to 96 preset camera positions through a transparent control diagram overlay on the live video display of the associated camera.
 3. The user shall be able to activate 1 to 3 pre-programmable scan patterns through a transparent control diagram overlay on the live video display of the associated camera.
 4. The user may choose to control pan/tilt direction and speed directly through a mouse navigation cursor. The user may choose to control zoom in/out functions directly through a mouse equipped with a scroll wheel.

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5. The software accessory shall provide for downloading video of alarms, 1 channel of audio, and text streams with associated video information from connected Intellex units.
 6. The accessory shall display a time estimate before downloading any information. The user shall be able to download a segment at this time, or at a later time or to select a smaller/larger alarm list or video segment(s).
 7. The user shall be able to download a list of alarm events from an Intellex unit, based on camera, and date/time search and alarm criteria. A list of events that meet the search criteria shall appear.
 8. The user shall be able to select and download one or more video segments from the alarm list.
 9. The user shall be able to search for an alarm video segment on an Intellex unit, based on camera, date and time criteria, and the type and nature of the alarm (e.g., motion detection), and then download it.
 10. The user shall be able to search for a specific text string based on date/time or alphanumeric characters and then download it.
 11. The user shall be able to search for non-alarm video segments on an Intellex unit, based on camera, date and time criteria, and then download a segment or segments.
 12. The user shall be able to assign an incident name to the downloaded video segment or segments and create a note for it (up to 1,024 alphanumeric characters, including spaces).
 13. The user shall be able to define the location to which incident(s) will be saved.
 14. The user shall be able to export the video clip in multiple AVI formats or in ACC format so that it can be transferred to other workstations.
 15. The user shall be able to download and save a portion of a video segment or segments.
- AG. The software accessory shall provide for reviewing downloaded video segments with or without associated audio or text information.
1. The directory tree shall provide access to saved incidents.
 2. When an incident is selected, the first frame of video for that incident or incidents shall be displayed in the image display area to the right of the directory tree.

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3. During playback, the user shall be able to control playback direction and speed, and to pause image playback. The user shall also be able to display the incident or incidents in full-screen.
 4. The user shall be able to review one video segment or up to 16 synchronized video segments previously downloaded from the same Intellex. (Version 3.0 or higher.) Synchronized video segments shall be those segments that occurred simultaneously and were downloaded in the same operation. Video segments shall be stored together as an incident in the database and played back on a multi-pane screen.
 5. The user shall also be able to review up to four asynchronous video segments from one, two, three or four different Intellex units. (Version 3.0 or higher.) Asynchronous video segments shall be those segments that may have occurred in different time frames and may have been downloaded separately. Video segments shall be dropped onto playback screens for viewing from the incident database.
 6. The mouse shall control whether video is paused or playing back at a normal rate.
 7. A slide bar shall control the direction and speed of the playback. Sliding the bar to the right shall increase forward playback of video. Sliding the bar to the left shall play back video in reverse at varying speeds.
 8. The mouse shall allow the operator to go to the incident's first or last frame of video.
 9. A button shall allow the operator to toggle the associated audio on or off.
 10. The mouse shall allow the operator to control the volume of the associated audio.
 11. A button shall allow the operator to toggle the associated text on or off.
 12. A button shall expand the image area to fill the display.
 13. A button shall access a screen that allows the user to manipulate and enhance a selected frame of video, using a number of image enhancement tools. The user can enhance, sharpen, smooth, lighten or change the contrast on the image. Then the image can be saved to a separate file or a floppy disk and/or printed.
- AH. The software accessory shall maintain the integrity of the original data and video on the Intellex unit.
- AI. The software accessory shall be American Dynamics Network Client Remote Management Software or equivalent.

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AJ. Network Client v4.1 Model Numbers (Remote Management Software):

ADDSCNC40	Network Client v4.1, management/config/viewing W, single license
ADDSCNC40UL	Network Client v4.1, management/config/viewing W, corporate license
	Network Client v4.1, upgrade from v3.1 and greater to v4.0
ADDSCNCVMK	Network Client Virtual Matrix/Keyboard single license
ADDSCNCVMKUL	Network Client Virtual Matrix/Keyboard unlimited license
ADDSCNC SI	Network Client Snap-in Manager license
ADACKBPC2000	Keyboard accessory, keyboard to PC connection kit, for AD2000 series keyboards
ADACKBPCMPCC	Keyboard accessory, keyboard to PC connection kit, for MegaPower ControlCenter keyboards

AK. Minimum Performance Specifications

1. The software accessory must be installed on a desktop computer that meets the following minimum requirements:

Intellex requirements v3.2/v2.6 or higher; to take advantage of new features;
Network v4.1 requires Intellex v4.1 or higher

Computer: 1 GHz Intel Pentium 4 or Celeron processor, or equivalent
processor that supports streaming SIMD extensions (SSE)

Operating System: Microsoft Windows XP Home, Microsoft Windows XP
Professional, Microsoft Windows 2000 Professional or
Microsoft Windows NT v4.0 Server or Workstation
(Service Pack 6a)

RAM: 512 MB

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Hard Disk:	120 MB for software installation; minimum 10 GB (local or network) for video storage
Other Drives:	CD-ROM for software installation CD-RW if export to CD is required
Monitor:	800×600 resolution and capable of displaying at least 16-bit color (32-bit recommended)
Video Card:	AGP or PCI Express X8 graphics card with 64MB memory and DirectX 8.0 support
Software Installation	CD-ROM drive
Sound Card:	16-bit (equivalent to SoundBlaster or higher)
Network Card:	Ethernet 10/100 NIC
Miscellaneous:	Mouse or other 2-, 3-button, IR or track-ball pointing device; 104-Key Enhanced keyboard or equivalent; 56 K modem (for dial-up access to Intellex)

AL. Minimum Network Requirements: Ethernet TCP/IP 10/100 Base-T NIC or dial-up modem is recommended. Data throughput across a network is limited by bus speed, network traffic, packet size and Intellex application. Each Intellex unit requires an IP address.

AM. Operational Information:

1. Remote Access LAN, WAN, Internet through an ISP or dial-up connection

AN. Maximum Number of Network Client Connections to an Intellex Unit

1. Concurrent Viewing of Live Video:

a.	Intellex DV 16000	Ten
b.	Intellex DV8000	Ten
c.	Intellex LT	Five
d.	Intellex Ultra	Ten

2. All other connections to Intellex to perform other functions are processed one at a time.

AO. Requirements for Advanced Features, including multi-pane layouts

1. CPU: 3.2 GHz Dual Core Intel Pentium 4 Processor

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2. Operating System: Microsoft Windows XP Home, Microsoft Windows XP Professional, Microsoft Windows 2000 Professional
3. RAM: 1 GB DDR2 533 MHz Memory
4. Hard Disk: 120 MB for software installation; minimum 10 GB (local or network) for video storage
5. Monitor: 1024 X 768 or higher resolution monitor with 32 bit color
6. Miscellaneous: AGP 8X (0.8) or AGP 4X (0.8V/1.5V) support
7. Video Card: High performance PCI Express x16 graphics card supporting DirectX 9.0 and dual independent monitors. At least 512 MB of high speed graphics memory. Four live windows requires two graphics cards and two PCI Express X16 slots.
8. DVD: DVD playback requires DVD drive
9. Port: Serial port is required for CCTV keyboard support

11. COLOR CAMERAS

- A. One third inch high-resolution color digital CCD camera with 0.7 lux low light sensitivity and at least 470 TV lines of resolution.
- B. The camera must incorporate a 1/3-inch CCD array with interline transfer and Digital Signal Processing (DSP) to produce no less than 470 TV lines of resolution. The CCD array active pixel count must be no less than 768 (H) x 494 (V) for NTSC and 752 (H) x 582 (V) for PAL.
- C. The camera must produce usable video at 0.7 lux (f1.2 lens) and provide an automatic electronic shutter (AES) and automatic gain control (AGC) to assure it will operate in a wide range of lighting conditions using manual iris lenses. For more extreme lighting conditions, the camera must have an auto detection circuit for both DC-type and EE-type auto iris lenses. The camera must accept either C or CS mount lenses without the use of an adapter ring.
- D. The camera must provide internal synchronization or external 360°, phase adjustable line-lock synchronization for “roll-free” switching.
- E. The camera must provide a selectable color/monochrome Night-Saver™ mode that automatically enhances images under extreme low light conditions.
- F. The camera must provide a selectable DVR-Saver mode capable of preserving hard drive file size on digital video recorders by up to 30% depending scene content, motion and lighting conditions.
- G. The camera must provide seven selectable zones for Back Light Compensation (BLC), and a White Balance that can be set to either Auto, or adjusted manually for color temperatures of at least 2500°K to 9500°K. The camera must also offer dynamic Aperture Correction.

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- H. The camera must have a signal to noise ratio of 50dB or better.
- I. The camera must provide dip switch settings to simplify installation without accessing programming menus.
- J. The camera must have a LED on the rear panel to indicate power
- K. The camera body must have embedded provisions to mount a ¼" x20 thread on either the top or bottom without having to relocate a mounting shoe.
- L. The camera shall be powered by either 24VAC(+33%, -15% – 60Hz NTSC / 50Hz PAL) or 12VDC(+15%, -10%)
- M. The camera shall be an American Dynamics ADCA470CAFN (NTSC), ADCA470CAFP (PAL), or equivalent.
- N. Minimum Performance Specifications: One-third inch high-resolution color digital CCD camera shall meet the following operating requirements:

1. Operational

Imager:	Interline transfer 1/3-inch CCD array
Video Output:	1.0 Vp-p / 75 Ohm, composite
Active Pixel Count	
NTSC:	768 (H) x 494 (V) pixels
PAL:	752 (H) x 582 (V) pixels
Minimum Scene Illumination:	0.7 lux (F1.2 lens)
Horizontal Resolution:	470 lines
Light Compensation Modes:	Automatic electronic shutter, On/Off
NTSC:	1/60 - 1/100,000 sec.
PAL:	1/50 - 1/100,000 sec.
Auto Iris Drive:	DC or EE-type, auto sensing
Backlight Compensation:	7 zones, selectable
Aperture Correction:	Yes
Synchronization Modes:	Internal or Line-lock with 360° phase adjustment
White Balance:	Auto or Manual Modes, 2500°~9600°K
Geometric Distortion:	None
S/N Ratio:	50 dB

2. Controls

Night-Saver™ (Nite-SVR):	On/Off
DVR-Saver™ (DVR-SVR):	On/Off
Backlight compensation	
(BLC1, BLC2, BLC3):	3 switches, 7 zones, On/Off
Automatic Gain Control (AGC):	On/Off
Automatic Electronic Shutter (AES):	On/Off
Synchronization (SYNC):	Internal/Line Lock

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Automatic White Balance (AWB): Auto/Manual
White Balance/Phase Adjust: WHT BAL/PHASE
Back Focus: Adjustment ring, with lock
DC Iris: Level control

3. Connectors

Input Power: Screw terminal block
Composite Video: BNC
Video Iris: 4 pin square connector
DC Iris: 4 pin square connector

4. Electrical

AC Voltage: 24 VAC (+33%, -15%), 50/60 Hz
DC Voltage: 12 VDC (+15%, -10%)
Power: 4.2 Watts maximum

5. Mechanical

Lens Mount: C or CS type
Camera Mount: 1/4-inch – 20 embedded (top or bottom)
Dimensions (H x W x L): 52 x 60 x 123 mm (2.05 x 2.36 x 4.84 in)
Unit Weight: 350 g (0.77 lb)
Color: Light gray (body), dark gray (accents)

6. Environmental

Operational Temperature: -10° to 50°C (14° to 122°F)
Storage Temperature: -20° to 60°C (-4° to 140°F)
Relative Humidity: 90% (non-condensing)

7. Regulatory

Emissions: FCC: Part 15, Class A
CE: EN55022, Class B
ICES-003
Immunity: CE: EN50130-4
Safety: UL2044

12. VANDAL RESISTANT HOUSINGS AND CAMERAS

- A. The Discover dome contains either a high-resolution, high resolution wide dynamic range, or standard resolution color fixed camera with choice of 2.5-6mm, 3.8-9.5mm and 9-22mm variable focal auto iris lens mounted in a high impact vandal resistant housing.
- B. The assembly shall be a low profile housing which is made from polycarbonate and composite materials with a polycarbonate viewing bubble.

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1. The vandal resistant housing and camera shall be an American Dynamics Discover series or equivalent.
 2. Within the housing there shall be a mounting bracket with a gimbal arrangement to allow adjustment of the camera in the x, y and z axis. The gimbals shall have locking screws to resist movement once the camera is adjusted.
 3. The housing shall include tamper resistant fasteners to prevent entry without a special tool. Tamper resistant fasteners shall be pin-in Torx Type.
 4. Installed within shall be a high-resolution, high resolution wide dynamic range or standard resolution color fixed camera with choice of 2.5-6mm, 3.8-9.5mm and 9-22mm variable focal auto iris lens.
 5. The housing shall be mountable in two base configurations: surface mount dome and flush mount dome.
 6. Optional wall, pendant, inside corner, external corner, pole and electrical box mounting options will also be available.
 7. The housing shall include a threaded hole for ¾-inch NPT conduit in the back, as well as a ½-inch NPT conduit side entry.
 8. The housing shall meet the requirements of NEMA4X (IP66) for weather resistance. An optional field installed heater shall be available.
 9. The housing cover shall include a gasket and retain the fasteners for easier installation. A lanyard shall retain the housing cover to aid installation.
- C. The bubble shall meet impact resistance equivalent to 54.4 kg (120 pounds) of force with repeated strikes. The bubble shall have a thickness of 2.5mm (±0.1mm).
- D. The high resolution camera shall be a high-resolution color 1/3-inch CCD type with 540 lines of resolution and light sensitivity of 0.65 lux at F1.2.
1. The camera shall be available in NTSC and PAL formats.
 2. Dip switch settings shall control Night-Saver, White Balance (Normal, Extended), line lock, flickerless mode, backlight compensation and automatic gain control.
- E. The Wide Dynamic Range camera shall be a high-resolution color 1/3-inch Pixim type with 504 lines of resolution and light sensitivity of 0.95 lux at F1.2.

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1. The camera shall support NTSC and PAL formats.
 2. The camera shall support on screen menu display and shall control Night-Saver, DVR-Saver, White Balance, Wide Dynamic Range, line lock, video format (NTSC, PAL), Digital Slow Shutter, digital zoom and general picture adjustment.
- F. The standard resolution camera shall be a high-resolution color 1/3-inch CCD type with 330 lines of resolution and light sensitivity of 3.0 lux at F1.4. The camera shall be available in NTSC and PAL formats.
- G. Three lens options shall include a 2.5-6mm (F-stop 1.3) variable focal, 3.8-9.5 (F-stop 1.2) variable focal and 9-22mm (F-stop 1.3) variable focal lens. Each shall feature DC auto iris with level control.
- H. The camera shall operate from 12Vdc or 24Vac (60Hz NTSC or 50Hz PAL) and draw a maximum of 3 watts.
- I. Minimum Performance Specifications: Vandal resistant housing/camera must meet the following operating requirements:

1. Operational

HIGH RESOLUTION COLOR MODELS – ADCDH SERIES

Imager	1/3-inch CCD
Video output	1.0 Vp-p/75 ohm
Horizontal resolution	540 TV lines
Active pixel count:	
NTSC	768 (H) x 494 (V)
PAL	752 (H) x 582 (V)
Minimum scene illumination	0.65 lux
Sync system	Line-lock, adjustable or internal
S/N ratio	50db
White balance	Automatic White Balance
AWB range (normal)	2700K - 11000K
AWB range (extended)	2000K - 18000K
Backlight compensation	Center weighted On/Off
Night-saver	Selectable On/Off
Auto iris drive	dc
Composite video	BNC

WIDE DYNAMIC RANGE COLOR MODELS – ADCDW SERIES

Imager	Pixim Orca sensor
Video output	1.0 Vp-p/75 ohm
Horizontal resolution	504+ TV lines
Active pixel count	720 (H) x 540 (V)
Minimum scene illumination	0.95 lux @ F1.2
Digital slow shutter (DSS)	2x (default) - 32x
Wide dynamic range	120dB/17 bit

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Sync system	Phase-adjustable line-lock, or internal
S/N ratio	>42dB
White balance	AWB, ATW, manual, 1-touch
AWB range (normal)	2200K - 7500K
AWB range (extended)	2000K - 11000K
WDR metering zone	One zone adjustable
Flickerless mode	Selectable On, Off or NTSC JP 50Hz
Night-saver	Selectable On/Off
DVR-saver	Selectable On/Off
Digital slow shutter (DSS)	1/2s to 1/32s
Digital zoom	Scalable, up to 2x
Auto iris drive	dc
Composite Video	BNC

STANDARD RESOLUTION COLOR MODELS – ADCDS SERIES

Imager	1/3-inch CCD
Video output	1.0 Vp-p/75 ohm
Horizontal resolution	330 TV lines
Active pixel count:	
NTSC	510 (H) x 492 (V)
PAL	500 (H) x 582 (V)
Minimum scene illumination	0.7 lux @ F1.2
Sync system	Internal
S/N ratio	48dB
White balance	Automatic White Balance (AWB)
AWB range	2700K - 11000K
Auto iris drive	dc
Composite Video	BNC

2.5-6MM LENS

Iris	F1.3 ~ 360
F-stop	1.3
Field of View (H x V):	
Wide	108.2° x 80.4°
Tele	47.6° x 35.6°

3.8-9.5MM LENS

Iris	F1.2 ~ 360
F-stop	1.2
Field of view (H x V):	
Wide	74.2° x 54.0°
Tele	30.0° x 22.4°

9-22MM LENS

Iris	F1.8 ~ 360
F-Stop	1.8
Field of View (H x V)	
Wide	30.7° x 22.7°
Tele	14.1° x 10.6°

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2. Electrical

ALL MODELS

Power input* 12Vdc -10% + 20%
24Vac ±20%, 50/60Hz

Power consumption:

ADCDS models	1.7 watts
ADCDH models	2.8 watts
ADCDW models	3 watts
Input connection	Flying lead or plug

*NEC Class 2/LPS power supply required.

3. Mechanical

Dimensions (H x W) 92 x 136mm (3.6 x 5.4in)

Weight:

ADCDS Models	0.9kg (1.9 lbs)
ADCDH Models	1.0kg (2.2 lbs)
ADCDW Models	0.9kg (1.9 lbs)
Housing Color	White
Bubble Material	Polycarbonate
Bubble Diameter	94mm (3.7in)
Bubble Thickness	2.5mm (0.1in)
Tinted	1.0 F stops
Clear	0 F stop
Pan Range	360°
Effective Tilt Range (at 43cm [17 inches]*)	180° (±90°)

*Using 2.5-6MM lens at wide

4. Environmental

Without Heater	-30° to 50°C (-22° to 122°F)
With Optional Heater	-45° to 50°C (-49° to 122°F)
Humidity	90% (non-condensing)
Storage Temperature	-20° to 60°C (-4° to 140° F)

5. Regulatory

Emissions	FCC part 15 Class B CE:EN55022 ICES-003
Immunity	CE: EN50130-4
Safety	UL/cUL CSA C22.2

6. Warranty

Minimum one year

13. SPEEDDOME ULTRA 8 22X CAMERA DOME

A. Description:

1. High-speed, programmable dome with high-resolution, DSP5, color camera
2. 22X optical zoom, 11X digital zoom, and 242X total zoom capabilities
3. Dome to conform to RoHS initiative standards

B. The dome assembly must be comprised of a high-speed pan/tilt assembly, high-resolution color camera with 22X optical zoom, 11X digital zoom permitting up to 242X total zoom, and a horizontal resolution of 470TVL. The camera/lens assembly must provide for continuous, full-time, autofocus capabilities.

C. The pan mechanism must incorporate a sealed precision slip ring to provide 360° of continuous pan rotation. The tilt mechanism must provide for 110° of travel. Precise manual panning and tilting must be achievable through a combination of variable-speed operator control (speed ranges) and automatic adjustment of these speed ranges dependent upon zoom factor. Manual pan and tilt speeds must range from 0.25° to 100° per second. Preset pan speeds must range from 1° to 360° per second, and preset tilt operating speeds must be from 1° to 220° per second. Pan and tilt speeds will be automatically adjusted by the zoom factor to allow the user the same ease of control, regardless of the field of view. High-speed, DC direct-drive motors must be used to maintain high torque through the entire operating range. These motors must use pulse-width modulation and encoder feedback to control the acceleration, speed, and deceleration of the motors to ensure smooth, precise, accurate, and fluid movement. The design shall use DC direct-drive motors and no belt to ensure long-term, reliable operation.

D. The dome assembly must provide video transmission via unshielded twisted pair (UTP) as standard.

E. The design of the dome shall not require the use of a bubble indoors to be covert, but shall support the option of either a clear, smoked, silver, or gold bubble.

F. The dome assembly shall contain a built-in, multi-protocol receiver/driver for use with matrix switching systems using one of the following protocols:

1. AD Manchester control code and a single 18AWG shielded twisted pair (STP) to support up to three daisy-chained domes a maximum of 1500m (5000ft)

2. SensorNet control code and a single 22AWG unshielded twisted pair (UTP) to support up to 32 daisy-chained domes a maximum of 1000m (3000ft)
3. RS-422/RS-485 control code and two pairs of 22AWG STP cabling to support up to 10 daisy-chained domes a maximum of 1000m (3000ft)
4. AD-UTC and a 20AWG RG-59U video cable to control a dome a maximum of 700m (2,300ft)
5. The receiver/driver will provide all voltages for camera controls, pan and tilt functions, and all motorized lens functions. In addition, the dome shall support selected third-party protocols for integration to other systems without the need for optional translator boards.
6. The dome must natively support the National Transportation Communications for ITS Protocol (NTCIP) version 1205:2001 v01.08, implemented via the RS-422 communication interface.
7. The dome must include standard support for UTP dome connections, which allow the use of CAT2-6 cabling for transmission of video or video with up-the-coax dome control signals up to 300m (1000ft).
8. The dome shall support 96 Presets, 16 Patterns, and 16 Preset Sequences depending upon protocol and controller used. The dome shall also support a Home Position that automatically returns the dome to a Preset, Pattern or Preset Sequence after a specified period of inactivity: 1-60 minutes. A freeze frame function must be available that maintains a static image on-screen during dome movement and lens adjustment when presets and patterns are called. This freeze frame function helps to preserve hard-drive space when a digital video recorder is used.
9. The dome must support a minimum of eight privacy zones to prevent users from viewing sensitive or secured areas. So as not to interfere with normal surveillance operations, these on-screen “shields” must block out only the area that has been defined as sensitive. The privacy zones should not cause the screen to blank out when the sensitive area is within the camera’s field of view. On the monitor, the privacy zones should appear larger or smaller depending on the camera’s zoom factor.
10. The dome must support on-screen programming of dome parameters, including proportional flip, direction indicators and azimuth, maximum zoom stop, line-lock or internal crystal synchronization, AGC, white balance, alarm actions and default states, and home position. On-screen programming of dome name, 16 Area names, 96 Preset names, 16 Pattern names, and four alarm names must also be provided. All of this on-screen programming, as well as the rest of the on-screen displays must be available in the following languages: English, French, Italian, German, Spanish, and Portuguese.

11. A DirectSet menu must be used to provide easy access to common dome settings when installed with compatible controllers. This DirectSet menu must provide access to the following features:
 - a. dome configuration menu
 - b. auto iris/autofocus resume
 - c. flip
 - d. default apple peel pattern
 - e. set North position
 - f. line lock off
 - g. line lock on
 - h. activate smooth scan
 - i. activate stepped scan
 - j. activate random scan
 - k. activate a preset sequence
 - l. display the dome information screen
12. Password protection must be provided to prevent unauthorized access.
13. Dome direction indicators and azimuth reading; Dome, Area, Preset, Pattern, Preset Sequence and alarm names; and zoom, focus, and iris status must be displayable on the monitor. All on-screen text character attributes must be user-selectable solid or translucent white, with or without black outline.
14. On-screen display of dome usage statistics must be available. This usage information must provide a record of the number of pan, tilt, and zoom commands issued by the dome; operating time, time from last reset in seconds, and total reset count.
15. The dome assembly design shall contain four alarm inputs and be field programmable to receive “normally open” or “normally closed” contacts. If operating on a SensorNet or RS-422 network, the dome shall be capable of receiving the alarm and transmitting the alarm back to the switching system and/or reacting to the alarm event independent of the switching system. If operating on a Manchester network, the dome must be able to process the alarm internally and automatically activate a Preset, Pattern, or Preset Sequence.
16. The dome assembly shall contain a single auxiliary output (outdoor dome) or three independent auxiliary outputs (indoor dome). The outdoor dome single auxiliary output shall be a form C relay contact. Each open collector output must respond as momentary or latching (depending on system capability).
17. The open collector of each auxiliary shall be required to handle +12Vdc at a maximum of 40mA.

18. The complete dome assembly must be capable of operating to full specification with an applied voltage of 18 to 30Vac at a frequency of 50 or 60Hz and meet Class 2 standards. The power consumption cannot exceed 11W with all functions operating. The dome assembly shall have surge protection for the video, communications, power, and alarm connections.
19. The camera shall have a 22X optical zoom and be a 1/4-inch CCD interline transfer device. The camera shall provide a minimum horizontal resolution of 470 lines with a usable video signal with a scene illumination of better than 0.3 Lux (20 IRE with AGC on) and 0.02 Lux (with an open shutter selection of 1/4 sec).
20. The video output synchronization shall be 2:1 interlace and will observe the NTSC or PAL standards. Line-lock with an adjustable vertical phase must also be provided.
21. The lens must be color corrected, 4–88mm, f1.6, and must have continuous autofocus with manual override. The lens must also have auto-iris with manual iris override. The autofocus and auto-iris resume settings shall be configurable via on-screen menu settings.
22. The dome shall incorporate a twist-lock release base for ease of installation and service. This base enables the installer to wire the appropriate cables onto an I/O board contained within the twist-lock base. The I/O base enables wiring to be completed once and for the housing/eyeball assembly to be connected and disconnected to the twist-lock base without disturbing the wires or connections. This I/O base option shall support four alarm inputs and three auxiliary outputs. In the event that the camera assembly must be replaced, the I/O base shall store presets, patterns, and other selected programming information. Each base will include diagnostic LEDs to indicate power and proper communications to and from the matrix.
23. An installation tool that enables service personnel to connect and disconnect the housing/eyeball assembly without the use of a ladder or lift must be available. The dome and base must be available separately so installation of the base can be accomplished by qualified personnel prior to the purchase of the dome or housing/eyeball assembly. An outdoor housing must also be available and shall provide for the same ease of installation and service.
24. Upon initial power up and after dome resets, diagnostic tests must be run, including communication loopback, camera loopback, and motor circuit tests. The results of these tests must be displayable on the monitor. After initialization, the dome shall automatically pan, tilt, and zoom to its previous position.
25. The dome shall be SpeedDome[®] Ultra 8 ADSDU822 series or equivalent.

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- G. Minimum Performance Specifications: The dome must meet the following operating requirements:

1. Operational

Manual Pan/Tilt Speed:	0.25° to 100° per second (based on zoom position)
Preset Pan/Tilt Speed:	360° per second maximum (Pan) 220° per second maximum (Tilt)
Pan Travel:	360°, continuous
Tilt Travel:	110
Pan/Tilt Accuracy:	± 0.5°
Zoom/Focus Accuracy:	± 0.5%
Programmable Patterns/Sequences/Areas/ Privacy Zones:	16/16/16/8
Direction Indicators:	Yes
Presets:	96 max, system-capability dependent
Auto Synchronization:	
Line-Locked	Remote V-phase adjustment
Internal:	Built-in sync generator
Address Range:	
RS-422/RS-485:	1 to 99
Manchester:	1 to 64
SensorNet:	1 to 255
AD-UTC:	Based on number of inputs
Alarm Inputs with I/O board (indoor only):	
	4 dry contacts with optical isolation/3.5mA sink
Alarm Outputs with I/O board (indoor only):	
	3 open collector drivers at 12Vdc, 40mA

2. Integral Receiver / Driver

Control Code:	AD Manchester, SensorNet, RS-422, or UTC
Maximum Daisy-Chain Devices:	
RS-422/RS-485:	10 Domes up to 1000m (3000ft)
SensorNet:	32 Devices up to 1000m (3000ft)
AD Manchester:	3 Domes up to 1500m (5000ft)
Controllable Functions:	Pan, Tilt, Zoom, Focus (Manual/Auto), Iris (Manual/Auto)

3. Mechanical

Dimensions (includes base) (H x D):	205mm x 120mm (8in x 4.7in)
Mounting Options:	Ceiling, wall, corner, pendant mounts and Top Hat, available; outdoor housing options available

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Bubble Options (for Top Hat Mount): Clear (f0)
Smoked (f1.0)
Silver (f2.0)
Gold (f2.0)
Weight (Housing and Eyeball): 1.09kg (2.40 lbs)
Weight (Base with I/O board): 0.16kg (0.35 lbs)

4. Electrical

Input Voltage: 18 to 30Vac, Class 2 LPS
Design Tolerance: 16 to 36Vac
Line Frequency: 50/60Hz
Power Consumption: 11W maximum
Power-on In-rush current: 1.5A
Allowable Drop-out: 100 μ s
Surge Protection:
Video: Low-capacitance Zener suppressor of 6.5V, 1500W
SensorNet/Manchester: Isolation transformer coupled, 2000Vrms; PTC resettable fuse protects transformer; 9.8V, 1A, 500W; 8/20 μ s impulse
RS-422/RS-485: 10kA impulse rated gas tube
Alarm Input/ Auxiliary Output: TVS rated at 9.8V, 1A, 500W, 8/20 μ s impulse
Power Line: TVS rated at 60V, 250A, 1.5 joules; 8/20 μ s impulse

5. Camera and Lens

Imager: 1/4-inch interline transfer CCD
Lens: 4-88 mm, F1.6, with manual iris override
Scanning System: 2:1 interlace
Optical Zoom: 22X
Digital Zoom: 11X
Maximum Zoom: 242X
Synchronization: Phase adjustable line-lock
S/N Ratio: >50 dB (typical)
Gain Control: Automatic (AGC)
White Balance: Through-the-Lens (TTL)
Automatic Tracing White Balance (ATW)
NTSC:
Effective Pixels: 768 (H) x 494 (V)
Scanning: 525 lines, 60 fields, 30 frames
Horizontal: 15.734kHz
Vertical: 59.94Hz
Shutter Speed (Auto/Manual): 1/2 to 1/30,000
PAL:
Effective Pixels: 752 (H) x 582 (V)

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Scanning: 625 lines, 50 fields, 25 frames
Horizontal: 15.625kHz
Vertical: 50Hz
Shutter Speed (Auto/Manual): 1/1.5 to 1/30,000
Horizontal Resolution: Minimum 470 TVL horizontal
Sensitivity
(20 IRE with AGC on): Minimum of better than 0.3 Lux
Minimum of 0.02 Lux with open shutter
(1/4 second)

6. Features

Zoom Stop Factors:
First Zoom Stop: 22X or 33X
Maximum Zoom: Up to 242X
Automatic Gain Control: Off, On with adjustable max. dB, Open Shutter
White Balance: Auto, Manual
Red Setting: Adjustable if White Balance is set to Off
Blue Setting: Adjustable if White Balance is set to Off
Proportional Flip: On or Off
Line Lock: Off, On with adjustable vertical phase
Area Boundaries: Up to 16
Presets: 96, number of Presets dependent on system capability
Freeze Frame: Maintains static image on-screen during callup of Preset or Pattern
Home Position: Dome assumes a specified Preset or Pattern after a time-out period (1 to 60 minutes)
Alarm Processing: Internal (by dome), External (by controller) or both
Alarm Input States: Normally Open or Normally Closed
Dome Status:
Information: Text overlay can display status of zoom, focus, and iris; can choose to display direction indicators and name information for dome, Preset, Pattern, Areas, and alarms
Dome Information Screen: Displays dome product name, mnemonic and software version number
On-Screen Text:
Appearance: Choice of outline or no outline for text overlay; solid or translucent white characters
Language: English, French, Italian, German, Portuguese, and Spanish
Password Protection: 3 to 8 character, user-programmable, to prevent unauthorized access to programmable features

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DirectSet Menu: provides access to commonly used dome features when used with compatible controllers

7. Environmental

Operating Temperature: -10° C to 50° C (14° F to 122° F)
Humidity: 0 to 95% RH (non-condensing)
Storage Temperature: -20° to 65°C (-4° to 149°F)

8. Regulatory

Emissions: FCC: 47 CFR Part 15, Subpart B, Class A
CE: EN55022 Class B
CE: EN61000-3-2
CE: EN61000-3-3
AS/NZS 3548, Class A
CISPR 22
ICES-003
Immunity: CE: EN50130-4
Safety: UL: UL1950
CUL: CSA 22.2.950
CE: EN60950-1
IEC 60950-1

14. CAMERA HOUSING

- A. Description: High quality environmental housing designed to provide an excellent barrier against indoor and outdoor environments for most CCD cameras with fixed or zoom lenses.
- B. The camera housing must provide a unique 180° opening cover to provide full and easy access to the camera and lens for trouble-free installation and servicing.
- C. The maximum camera/lens combination length must be no less than 304.8 mm (12.0 in), including connectors.
- D. The housing must have a camera platform that can be secured in any position along the full length of the housing. This platform shall be constructed of a rigid non-conductive material to help eliminate common grounding problems.
- E. The camera housing must be constructed of a high-impact Magnum® 941 Polymer with a 4.8 mm (.19 in) Lexan® viewing window.
- F. The camera housing will protect against water and dust intrusion and meet a minimum of IP63 and NEMA-3R ratings. An optional sunshield must be available to protect the entire top half of the housing from solar radiation.

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- G. The housing must offer an optional thermostatically controlled pad heater and automatically regulate its output to provide heat in the housing and maintain a clear viewing window. The heater shall operate with either 24 VAC or 24 VDC supply voltages.
- H. The housing must offer an optional thermostatically regulated 24 VAC blower.
- I. Two weatherproof glands must be provided on the bottom of the housing for cable entry.
- J. The camera housing must have a light gray epoxy finish.
- K. The housing must be secured from unauthorized entries by the use of tamper resistant screws.
- L. Optional wall or ceiling mounts must be available for the camera housing. The mounts must have a weight load capacity of no less than 9.1 Kg (20 lbs.), and have a light gray finish to match the camera housing. The mounts shall be suitable for indoor or outdoor applications.
- M. The camera housing shall be an American Dynamics AD1314 Series or equivalent.
- N. Minimum Performance Specifications: The camera housing must meet the following requirements:

1. Mechanical

Construction:

Housing:	Magnum® 941 Polymer
Viewing Window:	4.8 mm (.19 in) Lexan®
Finish:	Epoxy
Color:	Light gray
Dimensions (H x W x L):	141 x 159 x 449 mm (5.56 x 6.2 x 17.68 in)
Unit Weight:	
Without sunshield:	1.8 Kg (4.0 lbs.)
With sunshield:	3.2 Kg (7.0 lbs.)
Cable Entry:	2 weatherproof glands
Max. Camera/Lens Length:	304.8 mm (12.0 in)
Camera Mounting:	Non-metallic multi-position front to back adjustment
Heater Kit:	
Type:	Thermostatically controlled pad heater
Supply Voltage:	24 VAC/VDC (12-30V)
Power:	0.63 A maximum

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Weight: 68 g (0.15 lbs.)

Blower Kit:

Supply Voltage: 24 VAC

2. Environmental

Weatherproof Standard: IP63 (NEMA-3R)

Operating Temperature: -23° to 43° C (-10° to 110°F) with
heater/blower

3. Regulatory

CE

4. Warranty

Minimum two years

15. FLAT PANEL MONITORS

- A. Description: High resolution 15- and 17-inch LCD multi-mode monitors, capable of 1024x768 (XGA) or 1280 x 1024 (SXGA, 17-inch model only) display and auto-sensing NTSC/PAL input.
- B. The LCD monitors shall provide an active matrix display capable of displaying high-resolution analog computer signals up to 1024x768 pixels for 15-inch model or 1280 x 1024 pixels for 17-inch model at 75 Hz. The display must automatically adapt to the appropriate input resolution. The LCD monitors must automatically detect and display all inputs, including composite NTSC/PAL video or computer signals. The LCD monitors must offer looping inputs for S-Video (Y/C) or BNC type connections.
- C. The LCD monitor must be capable of displaying a maximum of 16.7 million colors.
- D. The 17-inch LCD monitor must provide a viewing angle of $\pm 75^\circ$ (horizontal) or $\pm 70^\circ$ (vertical). The 17-inch LCD monitor must provide a tilt of -5° to 20° , a contrast ratio of 400:1, a brightness of 430 cd/m², and a response time of 25msec.
- E. The 15-inch LCD monitor must provide a viewing angle of $\pm 60^\circ$ (horizontal) or $\pm 60^\circ$ (vertical). The 15-inch LCD monitor must provide a tilt of -5° to 20° , a contrast ratio of 300:1, a brightness of 250 cd/m², and a response time of 25msec.

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- F. Each model must include a detachable base and VESA compliant mounting holes. In addition, VESA compliant mounting accessories must be available to mount the LCD monitors in rack, wall or pole applications.
- G. The monitor must include a universal power supply, allowing it to be compatible with a voltage range of 100 - 240 VAC (50/60 Hz). Power consumption must not exceed 45 watts.
- H. The LCD monitors must be shipped with both North American NEMA 5-15P and Continental European CE 7/7 power cords terminating in a standard IEC320 configuration.
- I. The monitor must contain a latching power switch which remains in the set position, either on or off, regardless of incoming power status. This means that the unit does not have to be physically turned back on after a power loss.
- J. The LCD monitor shall provide on-screen display (OSD) for adjusting monitor settings including brightness, contrast, auto adjust, phase clock, horizontal position, vertical position, sharpness, and color temperature.
- K. The monitor must be able to operate to full specifications within the normal temperature range of 10° to 40° C (50° to 104° F) and a storage temperature range of -20° to 60° C (-4° to 113° F).
- L. The LCD monitor shall be an ADMNM1LCD series or equivalent.
- M. Minimum Performance Specifications: The LCD monitor must meet the following requirements:

1. General

LCD Panels:	Active matrix TFT
Pixel Pitch	0.264 (H) x 0.264 (V) mm (ADMNM1LCD17)
	0.297 (H) x 0.297 (V) mm (ADMNM1LCD15)
Viewing Angle	±75° (H) ±70° (V) (ADMNM1LCD17)
	±60° (H) ±60° (V) (ADMNM1LCD15)
Viewing Area	338 (H) x 270 (V) mm (ADMNM1LCD17)
	304 (H) x 228 (V) mm (ADMNM1LCD15)
Color	16.7 million (max)
Brightness	430 cd/m2 (ADMNM1LCD17)
	250 cd/m2 (ADMNM1LCD15)
Contrast	400:1 (ADMNM1LCD17)
	300:1 (ADMNM1LCD15)
Resolution	1280 x 1024 (ADMNM1LCD17)
	1024 x 768 (ADMNM1LCD15)
Tilt:	-5° to 20°
Response Time:	25 ms (Tr+Tf) (typical)

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2. Electrical

Power Supply	100/240 VAC, 60/50 Hz auto switch
Consumption	45 watts max, standby 5 watts
TV System	NTSC/PAL auto detection
Scan Frequency	NTSC: 15750 Hz \pm 500 Hz/60 Hz PAL: 15625 Hz \pm 500 Hz/50 Hz

3. Mechanical

Dimensions (H x W x D)	
Without Base	40.05 x 33.02 x 6.35 cm (15.75 x 13.0 x 2.50 in)
With Base	40.05 x 40.95 x 18.41 cm (15.75 x 16.13 x 7.25 in)
Unit Weight	
Without Base	4.8 kg (10.5lbs) (ADMNM1LCD17) 4.3 kg (9.5 lbs) (ADMNM1LCD15)
With Base	5.4 kg (12.0 lbs) (ADMNM1LCD17) 5.0 kg (11.0 lbs) (ADMNM1LCD15)
Shipping Information	
Weight	6.8kg (15.0 lbs) (ADMNM1LCD17) 6.4 kg (14.0 lbs) (ADMNM1LCD15)
Color:	Black plastic bezel with Black cabinet
Construction:	Plastic
Mounting:	Detachable base with rack, pole or wall mounting options

4. Environmental

Temperature:	
Operating	10°E to 40° C (50° to 104° F)
Storage	-20° to 60°E C (-4° to 113° F)
Humidity:	
Operating	20 - 80% RH (non-condensing)
Storage	10 - 95% RH (non-condensing)
Altitude	15,240 m (50,000 ft)

5. Inputs/Outputs

Video	1 in (BNC); 1.0 V pp 75? 1 loop-through out (BNC)
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S-Video	1 in (DIN-4), 1 V pp 75? 1 loop-through out (DIN-4)
Audio	2 in (RCA); 0.7 V pp at 1 KHz 2 loop-through out (RCA)
XGA	1 in (D-sub 15 pin); 0.7 V pp 75?
Speaker Output	2 x 1.0 watts built-in

6. Controls

Front Panel Controls	Power, Auto Adjust, Menu, Up, Down
OSD Controls	Brightness, Contrast, Auto Adjust, Phase Clock, Horizontal Position, Vertical Position, Sharpness, Color Temperature, Language, Light Sensor, OSD Position, Video Select, Recall

7. Regulatory

Emissions	EN50081-1, FCC Class B
Immunity	EN50082-1
Safety	EN60950, UL1950, CSA 950

16. KEYBOARDS AND SYSTEM CONTROL SOFTWARE

- A. Description: Microprocessor based, full-function keyboard for complete control and programming of AD1024 matrix switcher/controller systems.
- B. The keyboard shall provide all control parameters and system programming required for the video matrix switcher/controller system. The operator keys shall be full travel, electro-mechanical style, and shall provide true tactile feel.
- C. The keyboard must be provided with a three axis, vector solving joystick, with pushbutton, for single handed control of fixed and variable speed cameras pan/tilts and domes. This joystick must be a "twist" joystick to allow the user to control a motorized lens' TELE and WIDE functions without using operator keys. The joystick must also have a pushbutton to FLIP appropriately equipped domes 180 degrees to provide continuous surveillance of subjects that pass directly underneath the dome; the user will not have to rotate the joystick 180 degrees or remove the hand from the joystick to press a key.
- D. As a minimum, the keyboard shall provide for the following control functions: video output (monitor) selection, satellite site selection, video input (camera) selection, motorized lens control (zoom, focus, iris), pan/tilt or dome control (pan/tilt, Preset set and call, Pattern set, call, clear, hold and repeat), auxiliary device control (on or off), tour control (hold, run, next and last), salvo control,

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alarm control, and camera lock/unlock feature. In addition, the keyboard shall provide macro keys that enable the programming of up to 1000 application-specific, user-definable macros.

- E. When used with the AD1024 Matrix Switcher/Controller System, the keyboard shall provide the following recorder control functions for both VCRs and digital recorders: Play, Record, Rewind, Fast Forward, Pause, Stop, Eject.
- F. Both application-specific as well as user-definable macro key labels shall be provided with the keyboard. These labels shall affix directly to the keys on the keyboard.
- G. When used with the AD1024 Matrix Switcher/Controller System, the keyboard shall provide for the synchronization of macro key programming; this enables macro keys to be “transferred” to similar keyboards.
- H. In order to prevent unauthorized access to system programming functions, a key operated switch, along with a removable key, shall be provided.
- I. LEDs must be provided to quickly indicate initial numbers entered and provide system confirmation of site, monitor, and camera selections. When used with the AD1024 Matrix Switcher/Controller System, the keyboard’s LEDs must also provide confirmation of recorder selection.
- J. The keyboard shall be provided with a standard bi-directional RS-232 communication port for interfacing to the matrix switcher/controller system. This port must provide field programmable baud rates of 1200, 2400, 4800, 9600, 19200 or 38400 baud. The RS-232 protocol must be compatible with that used by American Dynamics.
- K. The keyboard shall permit user programming of LED display brightness and both activation/deactivation and volume control of the internal beeper. A self test mode must also be provided to verify hardware and software operation of the LED display, communications port, joystick calibration and memory.
- L. The keyboard shall be compatible with desktop or rack mounted configurations.
- M. The keyboard shall be an American Dynamics AD2088 Series or equivalent.
- N. Minimum Performance Specifications: The microprocessor based keyboard, which provides complete control and programming of the AD MegaPower 1024 matrix switcher/controller system, shall meet the following operating requirements:

1. General

Site Selection:	16 sites, user selectable
Monitor Selection:	999 monitors, user selectable
Recorder Selection	2048 recorders, user selectable

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Camera Selection:	9999 cameras, user selectable
Macro Selection:	1000 macros, user definable
Keyboard displays:	
Site:	Displays currently selected satellite site
Monitor/VCR:	Displays currently selected video output or recorder
Camera:	Displays currently selected video input
Enter:	Displays numeric value for entry into the keyboard
Self-Test:	Verification that both hardware and software operation are working for the communications port, LEDs, joystick calibration and memory

2. Keyboard Control

Utility Features:

F1 and F2:	Function keys provide access to special system functions (for example., user log on/log off)
Site:	Addresses satellite systems
Key Switch:	Prevents unauthorized access to programming functions and system programming menus (removable key provided)
Numeric Keypad:	Enters numbers associated with video outputs (Monitors), Recorders, video inputs (Cameras), Macros, and Users
Clear:	Erases numbers entered on the numeric keypad before pressing an action key, such as Camera, Monitor, Macro, or User number

Monitor Control:

Monitor:	Calls a specified monitor to be controlled by the keyboard
Program:	Enables programming of system tour dwell times

Camera Control:

Ack:	Acknowledges and removes the displayed alarm from system
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Camera:	Calls a specified camera (video input) to the selected monitor (video output)
Run:	Starts a monitor tour, universal (system) tour or alarm tour for the currently selected monitor
Hold:	Halts the monitor tour, universal (system) tour or alarm tour for the currently selected monitor
Next:	Calls the next programmed camera display for the respective monitor, universal (system) tour, or alarm tour
Last:	Calls the previous programmed camera display for the respective monitor, universal (system) tour, or alarm tour, and continues running the tour in reverse order
Salvo:	Displays a pre-defined group (salvo) of camera inputs on a group of contiguous monitors, beginning with the currently selected monitor
Recorder Control:	
VCR:	Calls a specified VCR or digital recorder to be controlled by the keyboard
Play:	Plays the VCR or digital recorder
Pause:	Pauses the VCR or digital recorder
Rewind:	Rewinds the VCR or digital recorder
Fast Forward:	Puts the VCR or digital recorder in fast forward mode
Record:	Puts the VCR or digital recorder in record mode
Stop:	Stops the VCR or digital recorder
Eject:	Ejects the tape from the VCR or the DAT from the digital recorder
Macro Control:	Initiates a series of up to 1000 user-defined events.

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Pan/Tilt & Dome Control:

Joystick:	Vector solving joystick allows pan (left and right), tilt (up and down) and zoom (tele and wide) control of fixed or variable speed pan/tilts or domes and motorized lenses. Flip pushbutton flips suitably-equipped domes 180 degrees.
Iris Open:	Allows more light into the selected camera
Iris Close:	Allows less light into the selected camera
Focus Near/Far:	Adjusts the clarity of the viewed scene
(Auxiliary) On:	Activates features such as lights, locks, or alarms that can be controlled via the keyboard
(Auxiliary) Off:	Deactivates features such as lights, locks, or alarms that can be controlled via the keyboard
Shot (Preset):	Programs or calls pre-defined scenes for suitably equipped pan/tilts and domes
Pattern:	Programs, calls or repeats a pre-defined sequence of movements for suitably equipped pan/tilts and domes

3. Data Ports

One RS-232, 8-pin modular RJ-45 jack
Programmable Baud Rates: 1200, 2400, 4800, 9600, 19200, 38400

4. Electrical

Input Voltage:	9 VAC supplied by external transformer 120 VAC, 50/60 Hz (AD2088) 230 VAC, 50/60 Hz (AD2088X)
Power:	5 watts

5. Mechanical

Mounting:	Desktop or Rack mountable
Weight:	2.6 kg (5.5 lbs)
Dimensions (H × W × D)	
Desktop:	76 × 133 × 419 mm (3.0 × 5.25 × 16.5 in)
Racked:	133 × 38 × 483 mm (5.25 × 1.5 × 19 in)

6. Environmental

Environment:	Indoor
Temperature:	0–40 °C (32–104 °F)
Relative Humidity:	90% (non-condensing)

7. Regulatory Approvals

UL:	UL1950
CSA or cUL:	CSA 22.2 No. 950-95
TUV:	TUV IEC 950, EN 60950
CE:	CE IEC 950, EN 60950
Conducted Emissions:	EN50081-1: 1991 EN55022: 1987
Radiated Emissions:	EN50081-1: 1991
ESD Immunity:	EN50082-1: 1991 IEC 801-2: 1984
RF Immunity:	EN50082-1: 1991 IEC 801-3: 1984
EFT Immunity:	EN50082-1: 1991 IEC 801-3: 1984

17. OUTDOOR DOME HOUSING

- A. Description: Compact, attractive dome housing suitable for use in outdoor locations subject to extreme temperatures and wet conditions. The housing will incorporate a “twist-lock” mounting base to facilitate quick connection and disconnection of the dome housing/eyeball assembly, and a standard 1-½” NPT fitting to accommodate a wide variety of mounts.
- B. The outdoor dome housing will protect against water and dust intrusion and meet a minimum of NEMA-4 and IP66 ratings.
- C. The housing must include an outer sunshade and an inner aluminum housing with thermostat, heater, and fans to ensure protection and safe operation of the dome in temperatures of -40 °C to 50 °C (-40°F to 122 °F) with a humidity range of 0–95% (non-condensing). The housing shall be constructed of reinforced fiberglass high impact polycarbonate material along with a UV stabilized sun shade trim ring and top cover.
- D. The housing must prevent the buildup of ice on the exterior bubble and be able to melt ice that has formed on the bubble during a power outage or other event within one hour of power being restored. The heater must be controllable via auxiliary outputs to aid in the clearing of moisture accumulation. The heater must be of a modular design, easily removable for servicing.
- E. The housing shall operate in sustained winds of up to 240 kph (150 mph) when properly mounted and installed (wall, pendant, corner, pole, and over-the-roof mount with guidewires).

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- F. The housing and bubble shall have an Effective Projected Area (EPA) of approximately 125 square inches.
- G. The entire dome and housing will operate from a Class 2 power source requiring no more than 80 VA of power. The dome and housing shall be tolerant of 24 VAC supply voltages from 20 VAC to 36 VAC at 50/60Hz and be installed in accordance with Class 2 requirements.
- H. The housing must include an integral twist-lock I/O board to facilitate quick connect/disconnect of the dome from the housing. The housing shall incorporate “Euro-style” terminal screw connectors for ease of connection, and internal LEDs to verify proper power and communication status. The housing must provide four alarm inputs for use as alarm contacts and a Form C output rated at 30 volts AC or DC, 1 amp. The housing must provide for lightning and surge protection of the video, power, and communication lines.
- I. The housing must offer a choice of either a clear bubble with no light loss or a tinted bubble with a light loss of ≤ 1.0 or less. The bubble must be sealed with a gasket and secured with tamperproof screws. The appropriate security screwdriver bit must be provided with the housing.
- J. The housing shall be an American Dynamics RHODUL Series Outdoor Housing or equivalent.
- K. Minimum Performance Specifications: The dome shall meet the following minimum operating requirements:

1. Mechanical:

Construction:

Enclosure	Aluminum
Sun Shade/	
Trim Ring/Top Cover	UV stabilized, polycarbonate
Color	Light gray
Height:	321 mm (12.64 in)
Diameter:	244 mm (9.61 in)
Bubble:	Acrylic
Bubble Diameter:	75.3 mm (6.93 in)
Weight:	
Without Dome	2.6 kg (5.72 lbs)
With Dome	3.8 kg (8.36 lbs)
Shipping Weight:	3.3 kg (7.26 lbs)
Mechanical Connection	1.5 in NPT
Mounting Options:	Outdoor Pendant Mount Outdoor Pole Mount Outdoor Over-the-Roof Mount Outdoor Wall Mount Corner Mount

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2. Electrical:

Voltage	20–36 VAC, 50/60 Hz
Power	80 watts, maximum
Power-on In-rush Current	3 A
Surge Protection:	
Video	Series resistor of 3.9 Ω ; low-capacitance Zener suppressor of 6.5 V, 1500 watts, 500 watts, 8/20 μ sec impulse, 500 watts, 10 kA impulse rated gas tube
Manchester/SensorNet	Isolation transformer coupled, 2000 Vrms; PTC resettable fuse protects transformer; TVS rated at 5.6 V, 40 A, 0.1 joules, 8/20 μ sec impulse, 500 watts, 10 kA impulse rated gas tube
RS-422	Series resistors of 33 Ω ; TVS rated at 5.6 V, 40 A, 0.1 joules, 8/20 μ sec impulse, 500 watts, 10 kA impulse rated gas tube
Alarm Inputs (4)	series resistors of 33 Ω ; TVS rated at 5.6 V, 40 A, 0.1 joules, 8/20 μ sec impulse, 500 watts, 10 kA impulse rated gas tube
Power Line	TVS rated at 60 V, 250 A, 1.5 joules, 8/20 μ sec impulse, 500 watts, 10 kA impulse rated gas tube
Auxiliary Output	1000 V isolation Form 1-C relay
Allowable drop out:	150 ms

3. Environmental:

Weatherproof Standard	NEMA 4/IP66
Operating Temperature	-40 °C to 50 °C (-40 °F to 122 °F)
Humidity	0–95% RH (non-condensing)
Storage Temperature	-10 °C to 50 °C (14 °F to 122 °F)
Wind Loading	Sustained winds of 240 km/hour (150 miles/hour) when properly installed and mounted (wall, pole, ceiling, and over-the-roof mount with proper support)
Effective Projected Area (EPA)	~125 square in (~317.5 square cm)

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4. Regulatory:

Emissions

FCC: 47 CFR Part 15,
Subpart B Class A
CE: EN55022 Class B
CE: EN61000-3-2
CE: EN61000-3-3
AS/NZS 3548, Class A
CISPR22
ICES-003

Immunity

CE: EN50130-4

Safety

UL: UL1950
cUL: CSA 22.2 No. 950
CE: EN60950
IEC950

* * * END OF SECTION * * *